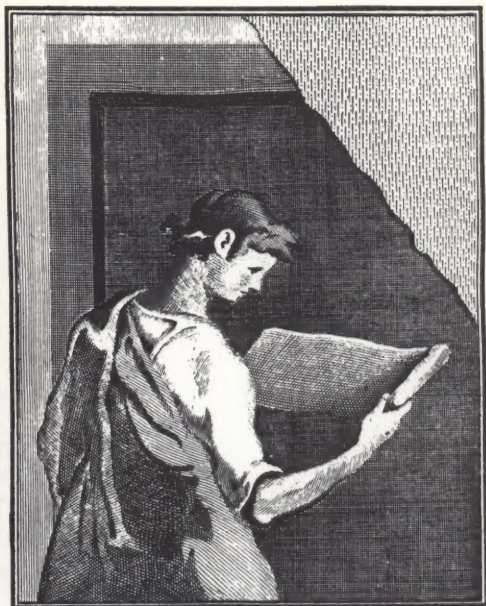


THE TECHNIQUE
OF PAINTING



THE MOUTH OF THE "GIOCONDA"

A

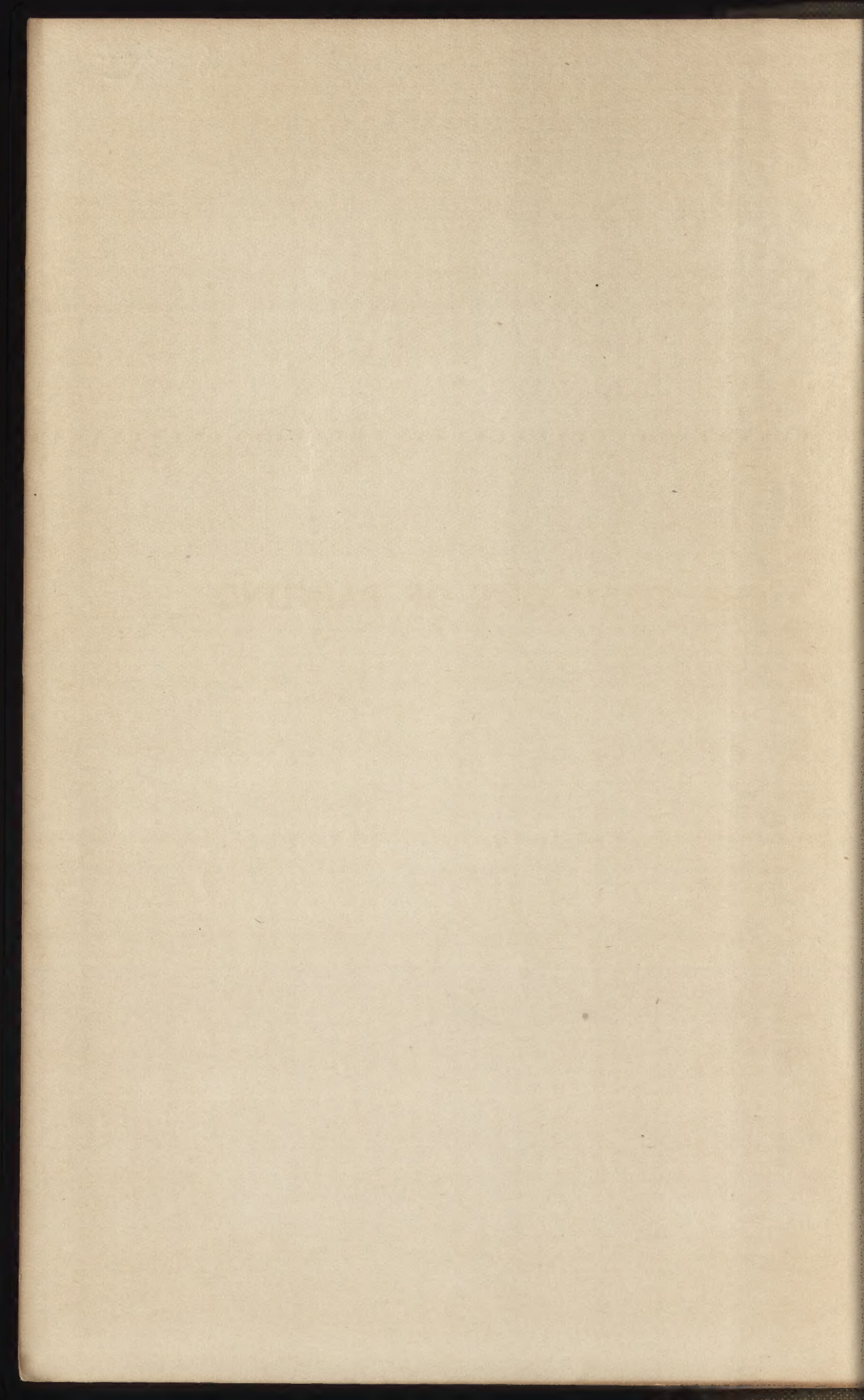


THE GETTY CENTER LIBRARY

25-

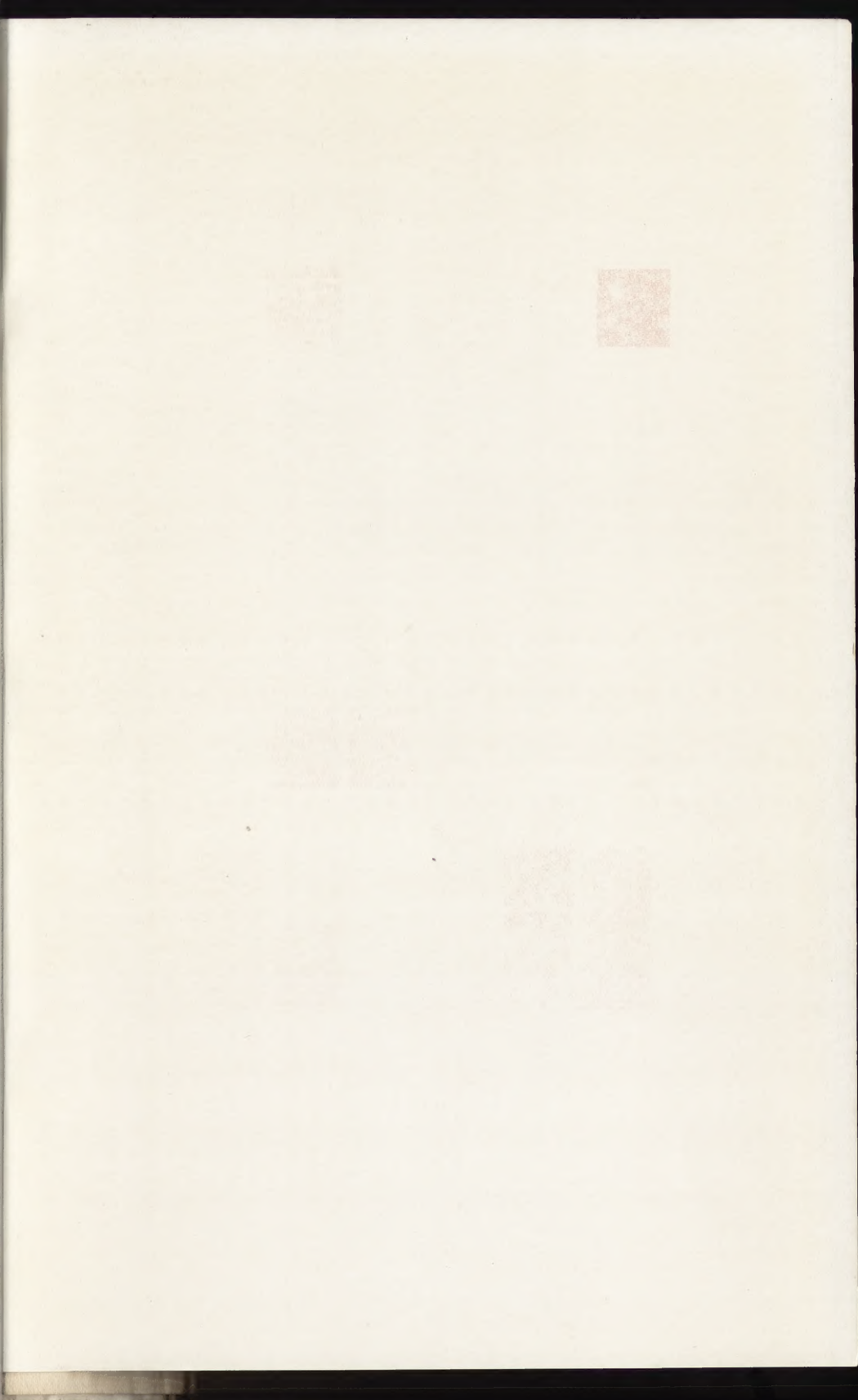
ack

120



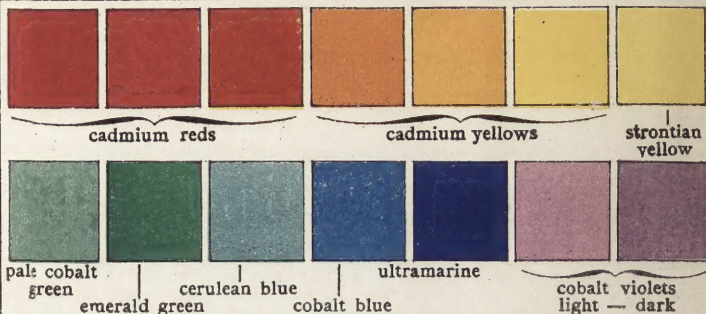
THE TECHNIQUE OF PAINTING

THE TECHNIQUE OF PAINTING



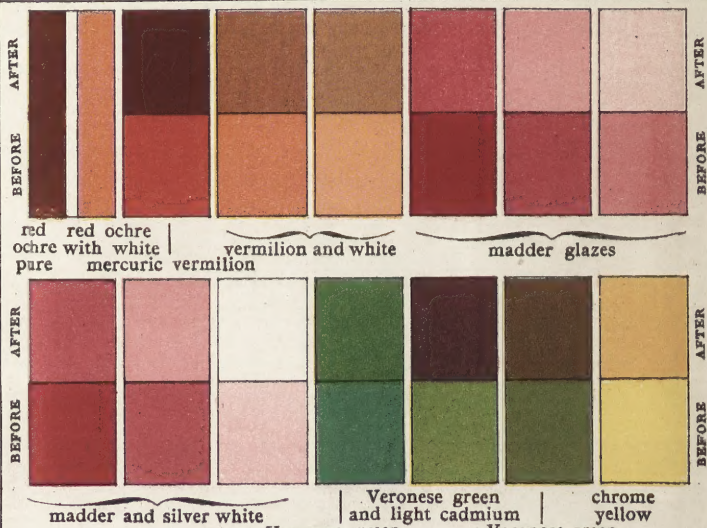
INFLUENCE OF LIGHT ON COLOURS

BRIGHT COLOURS UNAFFECTED BY LIGHT, GIVING ALL THE TINTS OF THE RAINBOW



Formerly only a single bright colour of the rainbow, lapis lazuli was absolutely permanent. At the present day all are so, except the madder omitted in this table.

EXAMPLES OF COLOURS, PURE OR MIXED, BEFORE AND AFTER PROLONGED EXPOSURE TO LIGHT.



Red ochre, a dull but permanent colour, is redder after exposure to light than the brilliant mercuric vermilion.

The T

BY CHA

WITH A P

ILLUSTRATED

BRILLIANT OIL-COLOURS WHICH ARE
UNAFECTED BY LIGHT.

THESE COLOURS REPRODUCE THE VIVID TINTS OF THE
PRIMAVERA COLOURS. MADDER LAKE IS THE ONLY ONE
UNREPRESENTED, BECAUSE OF ITS PERSISTENT NATURE.

29

DETERIORATION OF COLOURS SUSCEPTIBLE
TO LIGHT.

COLORS TESTED BY THE PAINTER, ETIENNE DINET,
shown before and after the experiment. Compare
the result obtained with examination, a vivid but
impermanent colour, with that obtained with red ochre,
a dull but permanent one. After the experiment, the
dull tint was the more brilliant of the two.

29

LONDON

NEW

BRILLIANT OIL-COLOURS WHICH ARE
UNAFFECTED BY LIGHT.

THESE colours reproduce the vivid tints of the
prismatic colours. Madder lake is the only one
unrepresented, because of its perishable nature.



DETERIORATION OF COLOURS SUSCEPTIBLE
TO LIGHT.

COLOURS tested by the painter, Etienne Dinet,
shown before and after the experiment. Compare
the result obtained with vermillion, a vivid but
impermanent colour, with that obtained with red ochre,
a dull but permanent one. After the experiment, the
dull tint was the more brilliant of the two.



The Technique of Painting

BY CHARLES MOREAU-VAUTHIER

WITH A PREFACE BY ÉTIENNE DINET

ILLUSTRATED IN COLOUR AND BLACK AND WHITE

CONS.
ND
1500
1783
1912
G. 7

LONDON WILLIAM HEINEMANN
NEW YORK G. P. PUTNAM'S SONS

MCMXII

Printed in England

THE CITY CENTER
LIBRARY

PREFACE

MY DEAR FRIEND,

I must confess to a certain embarrassment in writing a preface for your book on Painting.

In it you quote a considerable number of my personal observations, with an indulgence that may seem excessive. Hence, when I recommend your book to artists and amateurs, I am at the same time recommending my own opinions, which seems a little absurd.

Nevertheless, as an artist cannot legitimately pride himself on his perspicacity when such observations are forced upon him by his practice, and as those of several of my *confrères* are combined with my own, I disregard this little feeling of discomfort, and I do not hesitate to congratulate you sincerely on having undertaken such a work, and on having carried it out so well.

Like everyone else, you have been struck by this fact: at retrospective exhibitions of modern art, many pictures which on their first appearance were greatly admired for their brilliance and freshness, seem so darkened and tarnished as to be hardly recognisable.

Comparing this rapid deterioration with the admirable preservation of canvases executed by the masters of bygone centuries, you felt, as you have told me, impelled to undertake the present study.

It was peculiarly fitting that I should encourage

PREFACE

you in your task, for from the outset of my career I had suffered from the ignorance in which our professors had left us of those technical questions which the young painters of the past were compelled to study almost exclusively during their years of apprenticeship, and later on, my comrades, knowing that I was studying these questions, often came to confide their technical anxieties to me, and ask for means of assuaging them.

Your book, then, will render immense services to artists and amateurs. But after having read it, they must forswear certain widely received traditions.

It is generally agreed that the bad preservation of modern works is due to the bad quality of modern paints. "Look what admirable colours the Primitives had! What were their marvellous secrets? Who will give these back to us?" Such are the exclamations we constantly hear.

Well, artists must be willing to make their *mea culpa*. As a fact, if they will choose in accordance with the indications you give, they have at their disposal colours a thousand times more brilliant and more enduring than those used by the old masters. Defective methods, due to the neglect of the technical study of colours from the day when the artist found all the products he wanted ready for use in a shop, are responsible for all the evil.

Here is a striking example of this fact:—

Among the complaints I have been accustomed to hear against the poor quality of modern colours, one of the most frequent is that certain colours are so bad as to turn black within twenty-four hours after use; unhappy artists told me that a sky or a

PREFACE

nude they had painted with the utmost care was found the next day covered with hideous dark patches; they blamed their colourman, whose paints they promptly threw into the dustbin; then they bought new colours from another shop, and began their work again. Their labour was in vain, the hateful spots reappeared as quickly as before; they tried the colours of four or five dealers with the same wretched result; finally, in despair, they came to ask me if there *is* in these days a single colourman more or less honest, who sells colours more or less durable.

Now I say confidently, that there are no colours on the market so bad, that, either pure or mixed with others, they begin to deteriorate in the ordinary light of a studio in less than three weeks or a month; and even then the mixture they have undergone must have been a fatal one, such, for instance, as that of Veronese green with lemon cadmium, and the light in the studio abnormally strong.

How, then, are we to explain this rapid darkening of the colour? I was obliged to tell them the truth. It was due entirely to the methods they had adopted, and to prove the truth of my affirmation, I made the following experiment in their presence:—

I took some very bright tempera colours (that is to say colours containing enough agglutinant to prevent them from sinking), which looked exactly like oil colours. I chose two colours which are supposed to be incorruptible, and incapable of action one upon the other: zinc white and ivory black.

I mixed them together and spread a very even layer of the gray thus obtained upon a sheet of water-colour paper.

PREFACE

After a few minutes, when the water had evaporated and the coat of colour was perfectly dry, I handed them the palette, and told them to make up exactly the same tint of gray with this same black and white, and to put several touches of it on the gray I had laid.

They did so, and their trained eyes enabled them to apply these touches so that it was impossible to distinguish them from the ground; but in a few minutes these touches began to darken terribly, and by the time they were perfectly dry they had become almost black.

Here, then, were two colours, reputed absolutely durable, darkening not in two days, but in two minutes.

What was the cause of the phenomenon? Simply the change of appearance of a coat of colour when it solidifies; as the water has evaporated, the light is no longer refracted in the same manner, and this may be proved very easily, by letting a few drops of water fall on these spots. They at once regain their original brightness, blackening again as they dry.

The same phenomenon takes place with oil colours, but less rapidly, because they dry more slowly; they shrink as they solidify and leave voids, and as they no longer refract the rays of light in the same manner, they cause a similar darkening of the colour.

When such a rapid deterioration takes place the artist has only himself to blame; he must seek a remedy for the evil I have demonstrated; he must re-touch only with glazes, the darkening of which is counteracted by their transparency, or with an

PREFACE

impasto much lighter than the under-painting, so that, even after the inevitable darkening, it will still remain lighter than the paint to which it has been applied.

Your book will be very helpful to artists, not only for the future, but also for the present of their works.

For the future it will give them confidence with regard to the colours they use, by enabling them to choose these wisely, to avoid those which are always bad, to test the quality of those which, *well prepared*, ought to be permanent, and to form an opinion as to the honesty of their colourmen.

For the present, it will suggest remedies for the little material embarrassments they encounter daily in practice.

Finally, your very interesting description of the different processes employed to imitate nature may incite them to research on their own account, and lead to discoveries of new techniques which will rejuvenate the art of painting.

For all these reasons, I do not doubt that your book will obtain among them and among the amateurs who admire their works the success it deserves, the success I wish it with all my heart.

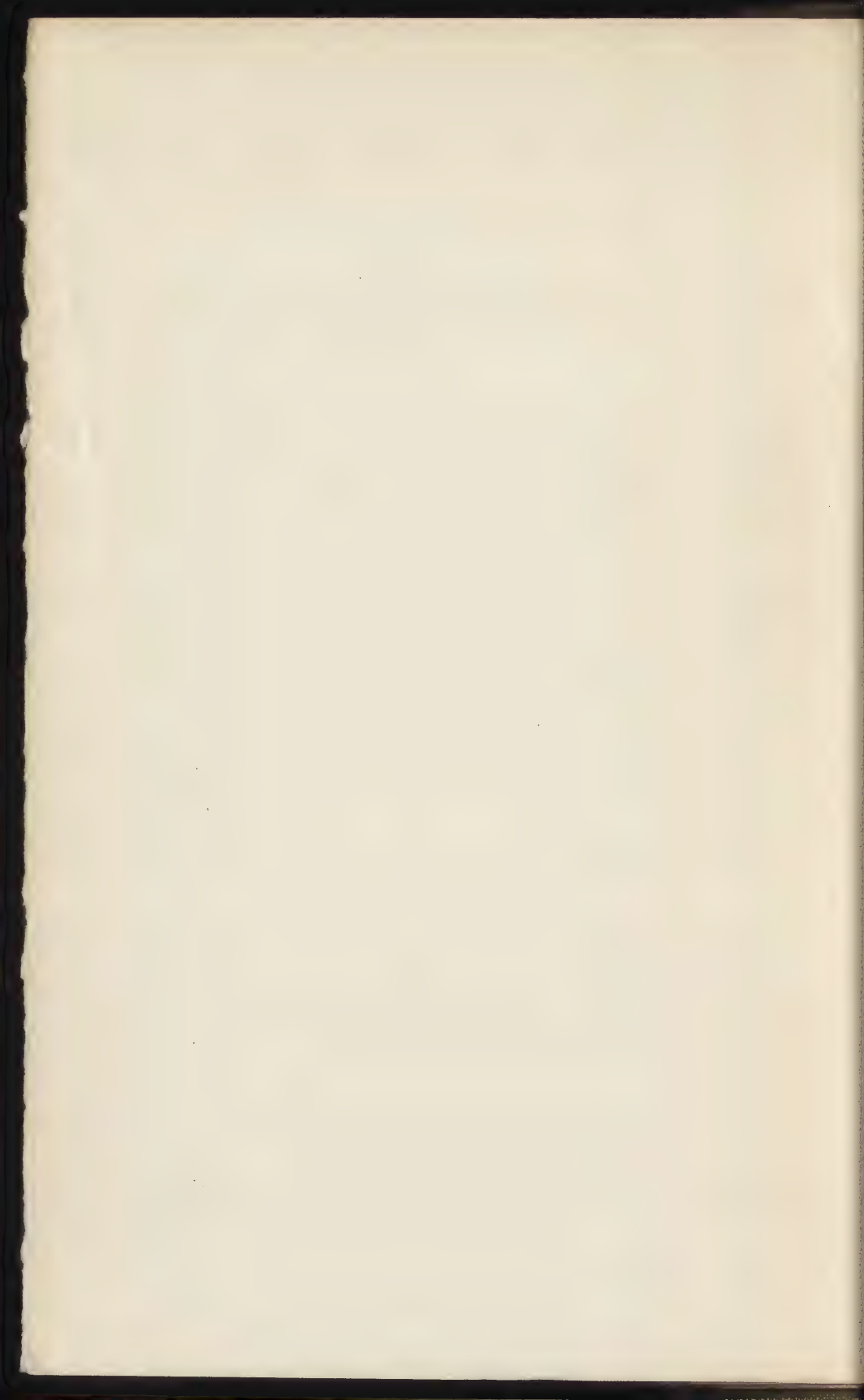
ETIENNE DINET.

TRANSLATOR'S NOTE

THE translator, careful to take no liberties with his author's text, has not thought it within his province to correct one or two historical inaccuracies which in no wise affect the practical value of Mons. Moreau-Vauthier's vivacious treatise. It may be well, however, to say that the best informed modern writers on art-history no longer credit the legend of the introduction of oil-painting into Italy by Antonello da Messina, that Cennino Cennini, as was shown by Milanesi, was neither a prisoner nor an octogenarian when he wrote his famous *Trattato*, and that Mr. Weale has established the date of Jan van Eyck's death as 1441, while that of Hubert, his elder brother, took place much earlier, in 1426.

CONTENTS

	PAGE
PREFACE.	v
TRANSLATOR'S NOTE	x
LIST OF PLATES	xiii
TECHNIQUE	i
PERCEPTION	67
PROCESSES	84
OPAQUE PAINTING	85
TRANSPARENT PAINTING	94
MIXED PAINTING	99
THE DISEASES OF PICTURES	111
DETERIORATIONS DUE TO BASES	112
ACCIDENTS	124
THE DETERIORATION OF COLOURS	146
THE PRESERVATION OF PICTURES.	175
HOW TO LOOK AT PICTURES.	239
CONCLUSION	245
<hr/>	
INDEX	247



LIST OF PLATES

PLATE	FACING PAGE
I. PRE-HISTORIC AND ANTIQUE ART	2
1. Painting with coloured earths : <i>Bison incised on the Rock</i> . (Cavern of the Fond de Gaume, Dordogne); 2. Fresco : <i>The Aldobrandini Wedding</i> (fragment). (Vatican Museum, Rome).	
II. GRÆCO-EGYPTIAN PAINTING	6
1. Distemper painting. Coloured powders mixed with water and fixed with gum : <i>Portrait of a Woman</i> . (The Louvre); 2. Encaustic painting. Coloured powders mixed with white wax : <i>Portrait of a Woman</i> . (The Louvre).	
III. CHIAROSCURO AND OPAQUE PAINTING	16
1. Transparence of shadows due to chiaroscuro. Fragment of the <i>St. John</i> , by Leonardo da Vinci. (The Louvre); 2. Exact values without transparence : <i>Entombment</i> , by Ribera. (The Louvre).	
IV. TWO DIFFERENT HANDLINGS, 15TH AND 16TH CENTURIES	22
1. Fragment of an oil-painting. Handling smooth and equal : <i>Condottiere</i> , by Antonello da Messina. (The Louvre); 2. Handling in which the high lights are loaded, and the shadows thinly painted : Fragment of <i>St. John</i> , by Rubens. (The Louvre).	
V. GLAZES WITH OR WITHOUT CHIAROSCURO	26
1. Broad handling, impasto covered with glazes without chiaroscuro : <i>Portrait of a Woman</i> , by Titian. (The Louvre); 2. Impasto covered with glazes, with chiaroscuro, which emphasises the modelling : <i>Hendrickje Stoffels</i> , by Rembrandt. (The Louvre).	

LIST OF PLATES

PLATE	FACING PAGE
VI. TWO HANDLINGS CONTRASTED.	28
1. Precision of drawing and modelling: <i>Descent from the Cross</i> , by Roger van der Weyden. (The Louvre); 2. Expression concentrated in the eyes and mouth: <i>The Pilgrims of Emmaüs</i> , by Rembrandt. (The Louvre).	
VII. PERFECTION OF SKILL IN 18TH CENTURY PAINTING	38
1. Supple lights, delicate shadows; 2. Supreme dexterity of handling: <i>The Bathers</i> , by Fragonard. (The Louvre).	
VIII. PREDOMINANCE AND ELIMINATION OF LOCAL TONE	46
1. Local tone modelled by values. Importance of the shadows, restriction of the lights: <i>Mme. Jarre</i> , by Prud'hon. (The Louvre); 2. Absence of local tone, no shadows. The modelling obtained by juxtaposed tones: <i>Woman Reading</i> , by Renoir. (The Luxembourg).	
IX. IMPRESSIONISM AND NEO-IMPRESSIONISM	60
1. Separate touches of pure colour, applied in conformity with the configuration of the surface, to get the modelling: <i>Rocks of Belle-Isle</i> , by Monet. (The Luxembourg); 2. Regular touches, scientifically juxtaposed. Modelling and form sacrificed to light: <i>Venice</i> , by Signac. (The Luxembourg).	
X. COLOUR-DIVISION	62
1. Touches of pure colour, applied in hatchings that follow the modelling of the forms: <i>Under the Olive-trees</i> , by Henri Martin. (The Sorbonne); 2. Rounded touches, subdued tints: <i>Portrait</i> , by E. Laurent. (The Luxembourg).	
XI. WORKED-UP IMPASTO	64
1. Use of the palette-knife: <i>The Pyrenees</i> , by Diaz. (The Louvre); 2. Various processes used and left very apparent by Monticelli. (Château Collection).	
XII. PASTEL	86
1. Tight handling: <i>La Tour</i> , by Himself. (St. Quentin, Museum); 2. Free handling: <i>La Tour</i> , by Himself. (Dijon, Museum).	

LIST OF PLATES

PLATE	FACING PAGE
XIII. PERIOD OF THE ITALIAN RENAISSANCE, 15TH CENTURY	98
1. Fragment of a Fresco; 2. The complete group: <i>Giovanna Tornabuoni</i> , by Botticelli. (The Louvre).	
XIV. PAINTING EXECUTED WITH EGG	102
<i>An Old Man with a Child</i> , by Ghirlandajo. (The Louvre).	
XV. LOADED IMPASTO	106
Relief obtained by loaded touches: <i>The Flayed Ox</i> , by Rembrandt.	
XVI. "ENVELOPPÉE" HANDLING	110
1. Fragment. Fat impasto, modelled in accordance with the forms; 2. Opaque shadows, <i>Saint Sébastien</i> , by Ribot. (The Luxembourg).	
XVII. 1. CRACKS. 2. PENTIMENTO	122
1. Cracks due to excess of oil and premature varnishing: <i>The Woman with the Dagger</i> , by Falguière. (The Luxembourg); 2. Underpainting insufficiently erased: <i>The Apotheosis of Homer</i> , by Ingres. (The Louvre).	
XVIII. DETERIORATION OF COLOURS	124
Cracks due to bitumen: <i>Cherubini</i> , by Ingres. (The Louvre).	
XIX. RESTORATIONS AND CRACKS	126
1. Bloom caused by excessive damp: <i>Marignan</i> , by Fragonard's son; 2. Restoration by Durandau, restorer of the Versailles Museum; 3. Cracks caused by thin painting, over a smooth priming: <i>Portrait of Mme. Rivière</i> , by Ingres. (The Louvre).	
XX. CRACKS AND REPAIRS	128
1. Pentimento apparent. Cracks due to premature varnishing; 2. <i>Nymph</i> , by Henner. (The Luxembourg).	
XXI. DETERIORATION OF COLOURS	160
1. Evaporation of rosy tints due to the use of lake: <i>La Gioconda</i> , by Leonardo da Vinci. (Formerly in the Louvre); 2. The rosy tints produced by native earths have lasted. Cracks due to a priming prepared with size. The same picture.	

LIST OF PLATES

PLATE		FACING PAGE
XXII.	EXTRAVAGANT LOADING OF IMPASTO Preservation difficult, removal of varnish impossible: <i>The Old Servant</i> , by R. P. Bonington. (The Louvre).	184
XXIII.	DETERIORATION AND RESTORATION 1. Lakes destroyed by whites, but intact in the shadows : <i>Holy Family of Francis I.</i> , by Raphael. (The Louvre) ; 2. Restorer's re-touches, which now appear as spots on the skin : <i>Crucifixion</i> , by A. Solario. (The Louvre).	206
XXIV.	DETERIORATION OF A FRESCO Deterioration due to alternations of damp and dryness. The colour blisters, bursts, and scales off : <i>Portrait of Pintoricchio</i> , at Spello.	220

PAINTING

TECHNIQUE

"The sun is God."—*Turner*, on his death-bed.

In Pre-historic Times.

Certain caves of the pre-historic period contain the first vestiges of the art of painting. Scholars assure us that the savages of to-day are carrying on the processes of primitive man when they stain their bodies and their idols with coloured earths, metallic salts, and vegetable juices.

Mons. Christol's study, *L'Art dans l'Afrique australe*,* shows cave paintings executed by Bushmen in four tones: reddish brown, black, white and yellow. Soot or charred bones must have furnished the black; the other tints were produced by coloured earths mixed with various substances and with the juices of plants, and applied with brushes made of feathers.

"There is no difference," says Mons. E. Pottier, "between the inventions of Bushmen or Hottentots and those of the first Greeks." In proof of this assertion Mons. Christol compares the paintings of the Bushmen with the paintings on Greek vases in the Louvre. The insignificance of the head strikes us in the African paintings, in the primitive Greek

* Published by Berger-Levrault.

THE TECHNIQUE OF PAINTING

paintings, and even in the pre-historic works discovered in the caves of Southern France. As these primitive races went naked, their artists gave more attention to the body than to the head, and their existence as hunters inclined them to take a greater interest in animals than in men.

Colours ground with a pestle upon a stone, when reduced to powder, were made into a paste with marrow, and these Primitives are also supposed to have mixed urine with their powder to bind and fix it.* The shoulder-blades of animals smeared with ochre seem to have been the first palettes, and large shells were used for the same purpose. This art was developed in the course of long periods. Some of the silhouettes represent animals: bisons, reindeer, horses, and wild boars. At first they were merely incised; gradually they began to be coloured with uniform black tints; red then made its appearance, and polychromy in red, black, brown and yellow was finally developed. A red and black bison painted on the wall of the cave of Altamira, in Spain, is a masterpiece of truth, precision and style.†

In Egypt.

The Egyptians might boast of having used colours six thousand years before the Greeks.

Egyptian painting was applied to statues and buildings. The sculptor was also the painter, colouring the figures he produced. He practised a very precise technique, and made use of highly developed processes. His colours, seven in number

* *La Caverne d'Altamira*, by L. Cartailhac and H. Breuil, Monaco, 1906.

† *Ibid.*

PRE-HISTORIC AND ANTIQUE ART



1. Painting with coloured earths : BISON INCISED ON THE ROCK.
Cavern of the Fond de Gaume (Dordogne.)



2. Fresco: The Aldobrandini WEDDING (fragment). (Vatican Museum, Rome.)



COLOURS OF THE EGYPTIANS

—red, blue, yellow, green, brown, black and white—were subdivided into tints sufficiently varied to give him in all some fifteen colours, mostly mineral in origin.

The very solid blue was produced by glass coloured with oxide of copper and pulverised. It was also extracted from lapis lazuli. Red was got from ochre, natural or burnt, and from cinnabar. The yellows were derived from ochre or sulphate of arsenic. The green, a very fragile tint, was obtained from copper, black from charred bones or charcoal. The white, which is remarkable for its brilliance and its excellent preservation, was gypsum.

Painting.

Gums were used to mix the colours, and honey is thought to have entered into the composition of some of them.

Colours in the forms of cakes, pellets and powder, were kept in small bags and in hollowed reeds. These ancient bags served the same purpose as the bladders used by the old masters, while the hollowed reeds answer to the metal tubes of our contemporary painters.

These colours were pounded with a muller on a hollow stone, and moistened with a mixture of gum tragacanth and water. Reeds were used to apply them. These reeds were soaked in water, which caused them to divide into very supple fibres. The prepared colours were sometimes kept in pots, but palettes of various shapes were also used.*

The material was thus complete. Painting

* In the Salle du Scribe, in the Louvre, Egyptian palettes and paint-brushes are exhibited.

THE TECHNIQUE OF PAINTING

commanded nearly all the necessary means of expression. It had coloured powders and an agglutinous medium to fix them upon wood, and on the mortars and stuccoes with which stone surfaces were overlaid. It was vivid, fresh, and solid.

But Egyptian painting remained conventional in its treatment of persons and objects. Its design, though this was held in check by difficulties it failed to overcome, such as foreshortening and perspective, was more correct than its colour. It represented forms with startling reality. But as soon as colour came into play the painter adopted formulas. Men were tinted brown, women yellow, and in general all figures and objects were represented with the same local colours. Receipts which prescribed the tones to be used for all objects were handed down from workshop to workshop.

The artist applied these tones uniformly, regardless of light and shade. He painted in flat tints coloured silhouettes, all of equal intensity, innocent of modelling and gradations. Planes, distances, perspective and chiaroscuro were non-existent for him, as for the public to whom he appealed.

Under the tenth dynasty, painters began to overlay this fresh and vivid painting with varnish, to preserve it from the dust and the action of the air. But in course of time the varnish cracked and darkened, and its use was abandoned.

In Greece.

We have every reason to suppose that Greek painting was equal to Greek sculpture. Would the Greeks, who had admired Phidias and Praxiteles, have lavished equal admiration on Apelles and

THE GREEK PAINTERS

Zeuxis without just cause? According to a tradition, birds came to peck the grapes in one picture; a painter tried to draw back a curtain in another; a horse neighed at a horse painted by Apelles.

Although legends and names have come down to us, the works of the Greek painters have disappeared, and it is not easy to determine the processes of these masters. The texts bearing upon them are rare, incomplete, and occasionally obscure, and nothing has survived of the treatises on painting written by Apelles and Euphranor.

The Greeks seem to have worked chiefly in tempera, like the Egyptians. They probably moistened their powders with an agglutinous solution of gum and water. The gum may have been replaced on occasions by size or egg, or by milk.* They applied their colours on a surface prepared with the agglutinous substance.

An anecdote recorded by Pliny supports this supposition. Protogenes, painting a dog, wanted to put foam on his mouth, and could not produce the effect. Irritated at his want of success, he threw a sponge soaked in colour at the dog's mouth, which achieved the desired illusion.

Greek painting seems to have had its origin in Sicyon or Corinth. The outline of the body was drawn with the brush. Cleanthes of Corinth painted in this manner, and Philocles, called "the Egyptian," doubtless because he had been to Egypt to study the native masters, just as our artists go to Rome. But Aridikes of Corinth and Telephanes of Sicyon filled in their silhouettes with black, and

* The French call all these mixtures *détrempe*. In English the egg-mixture is known as *tempera*, the size-mixture as *distemper*. See pp. 90—92. [*Tr.*]

THE TECHNIQUE OF PAINTING

Ecphantus of Corinth relieved them with touches of red, produced by pounded brick.

Eumares of Athens was an innovator. He distinguished the sexes, but not in the Egyptian manner. In the land of Andromache "of the white arms," he could not have tinted women yellow; he made them white. His formula was immediately adopted by the theatre, and Thespis, the tragedian, smeared white lead on the masks of the women to distinguish them from those of the men, which were stained with wine-lees.

Cimon of Cleonæ, his successor, determined the technique of Polygnotus and Micon. Cimon broke down the primitive stiffness, varied his attitudes, inclined his heads, gave animation to his looks, and suppleness to his nudes and draperies. Mons. Paul Girard believes that Micon even substituted polychrome for black figures. His painting must have been sober and conventional, but it was already concerned with the expression of shades. Cimon may be considered the first painter of Greece, chronologically.

The colours used by these early Greek masters were four in number: white, furnished by Melos earth; a yellow ochre, which was the Attic *sil*; a red derived from Pontic quartz (*sinopis*), and a lamp-black, *atramentum*.

Painting.

Fine draughtsmanship and these four colours produced moving compositions like the *Ilioupersis*, executed by Polygnotus at Delphi, in the temple of Apollo.*

* As regards composition, we must imagine "the pediment of a temple without landscape which served as the connecting medium; each scene had

GRÆCO-EGYPTIAN PAINTING



1. Distemper painting. Coloured powders mixed with water and fixed with gum : PORTRAIT OF A WOMAN. (*The Louvre.*)



2. Encaustic painting. Coloured powders mixed with white wax : PORTRAIT OF A WOMAN. (*The Louvre.*)



THE GREEK PAINTERS

Blue was lacking on the palette of Polygnotus, and yet this colour was in use around him for painting buildings and statues. No combination known in Greece had yet produced a green, says Mons. Girard; but a mixture of black and yellow may have afforded a grayish tone approaching to green. Mons. Girard writes further:—

“The brilliant polychromy then in vogue in sculpture and architecture could not have failed to re-act upon painting, had painting been open to such influences; but it was tending more and more to sobriety, concentrating all its efforts on beauty of line, intoxicated, so to speak, by the nobility of its design. In the sixth century it had been conventional through impotence; in the fifth this conventionality was deliberate.*

Design was supreme; colour remained an accessory; and this manner, flat, pale, proud, nervous and passionate, was, it would seem, the characteristic style of antique painting at its finest.

It was maintained in the works of Micon and of Pausanias, the brother of Phidias, contemporaries of Polygnotus. But very soon Apollodorus of Athens perfected the technique. As he was the first to attempt a gradation of tones, he was nicknamed the *sciagraph*, the skilful painter of shade.

Zeuxis and Parrhasius were more realistic, more popular, but perhaps less great than their precursors. Zeuxis himself said, modestly, of the child holding the bunch of grapes which deceived the birds:—

“If I had painted the child as well as I painted the grapes, the birds would have been afraid of him.”

its background; here trees, there the walls of Troy, just sufficient to indicate the scene of the episode . . . long parallel registers, encroaching one on the other, and showing none of the regularity of vases in the ancient style.”—Paul Girard, *La Peinture antique* (Quantin).

* *Ibid.*

THE TECHNIQUE OF PAINTING

Zeuxis concentrated his powers on modelling, and produced monochrome paintings, essays in *grisaille* and *camaïeu*.

Girard sees in this a return to monochrome methods. But should it not rather be considered an evidence of a new taste for modelling?

Parrhasius went still further. He drowned his contours in shadow, and emphasised the high-toned passages. Relief was at last introduced in painting.

The technique was now complete, and Apelles made his appearance. He was master of perfect design and marvellous modelling. Contemporary authors assure us that in his *Alexander hurling Thunderbolts* the fingers seem to stand out in relief, and the thunderbolts to be falling upon the spectators.*

He commanded a richer palette, no doubt; used new tints, such as green and blue, and his black was made of calcined ivory.† Besides, there had been improvements in the composition and admixture of colours, and variations in the materials for painting upon had been adopted.

It is possible that the Greeks were acquainted with fresco; that is to say, water-colour painting on the fresh plaster of a wall. It is supposed that Polygnotus' large compositions must have been executed in fresco. Be this as it may, certain

* One day, says Pliny, Alexander, paying a visit to Apelles' studio, began to talk somewhat imprudently about painting. The artist advised him to refrain, telling him that the little boys who were grinding colours in a corner were laughing at what he had said. Ælian attributes the incident to Zeuxis and Megabyzus, while Plutarch tells it of Apelles and Megabyzus.

† "Apelles," said Pliny, "produced black from burnt ivory, and he called it ivory black." Polygnotus and Micon made their black with the lees of wine, dried and boiled. Cydias of Cythnus was the first who burnt yellow to obtain vermilion.

ENCAUSTIC

extant texts prove that the Greeks painted upon panels fixed upon the walls beforehand, or placed in position after they had been decorated. These panels became the so-called easel-pictures; that is to say, pictures small enough to have been painted on an easel. A Pompeian caricature shows a painter at work before an easel.

The pictures of Zeuxis, Parrhasius and Apelles, which were executed upon wooden panels, were easily carried off into Italy by the Romans when they conquered Greece; the more ancient mural paintings alone remained.

According to some, Polygnotus was the inventor of encaustic, and according to others, Aristides.

Encaustic painting enjoyed great favour in Egypt, and in Greece from the Alexandrine period, and survived the antique world in Italy during the first centuries of the Christian era. This process, which has shown exceptional durability, remains somewhat of a mystery. Vitruvius, Pliny and Philostratus mention it, without giving any precise account of its technique.

In encaustic painting, white wax mixed with coloured powder was made up into cakes which were kept in boxes. When about to apply them, artists melted them on heated metal palettes. The coloured wax was laid on with a brush, but as it set very quickly when it grew cold, it was re-touched with irons made moderately hot, which fused the tints. It was commonly said of an encaustic painting: "So-and-so burned it," as we say of an engraving, "So-and-so engraved it."

Plutarch remarks that the sight of certain women leaves a pale and feeble image on the heart, like

THE TECHNIQUE OF PAINTING

tempera, and that of other women a burning and durable impression, like encaustic.

Numerous portraits painted in encaustic have been found in Egypt. They are generally to be distinguished from tempera by the traces of the tools on the paste ; but sometimes it is difficult to decide whether a work is in tempera or encaustic.

At Rome.

In Italy, painting retained the character of its Greek origin. In his *Natural History* Pliny divides colours into the *austere* and the *florid*. Florid colours had to be provided for the artist on account of their high price. They were : minium, armenium, chrysocola, purpurissum and indicum purpurissum. The austere colours were more numerous : sinopis, rubric, orpiment, melin, atramentum, burnt ceruse, sandarac, sandix, sericum, etc.

Purpurissum, the first of the florid colours, was obtained with the chalk used to burnish silver, thrown into the vats of the dyers of purple. The chalk absorbed the dye. Women used it to paint their faces.

The taste of amateurs had been perfected. Cicero perceived that painters see differently to other people. He wrote : " How many things, invisible to us, are seen by painters in shadows and projections ! " Pliny speaks of persons who have a taste for sketches. He tells us : " The last pieces of artists, those they have left unfinished, are more admired than their perfect productions . . . for one can see in them the sketch as it was left and the very thoughts of the artist." Dilettantism was developing just as the decadence was beginning.

BEGINNINGS OF MODERN PAINTING

In the most famous known work of Roman times, the *Aldobrandini Marriage*, in the Vatican, the process, the composition, the whole is Greek. Greek influences are no less evident in the Pompeian paintings, which, in spite of their great historical value, are merely the works of decorators. But in the presence of this charming decline, the dictum of Pliny the Elder seems very severe: "As men can no longer paint the soul, they are also neglecting to paint the body. I have said enough of a dying art."

In Modern Times.

In the seventh century Saint Gregory the Pope wrote: "Let the churches be filled with paintings, that they who do not know their letters may be able to read on the walls what they cannot read in manuscripts."

In the midst of an absolute decadence of the arts, painters were held fast by formularies within the limits prescribed by ecclesiastical authority. All individual liberty, all essays in proportion, form, reality, and beauty were forbidden.

Centuries passed before the first attempts at independence manifested themselves in Italy. Tempera painting remained in favour; manuscripts, shrines, triptychs and the walls of churches were alike covered with it. It shared the domain of painting with fresco.*

The *Libro dell' Arte* or *Trattato della Pittura* of

* Mosaic does not come within the scope of this study. The manuscript of the monk Eraclius, in the tenth century, *De Coloribus et Artibus Romanorum*, the treatise of the monk Rogierus, known as Theophilus, in the twelfth century, *Diversarum Artium Scheda*, certain others, and finally, the treatise of an Italian painter of the fifteenth century, Cennino Cennini, describe these two processes.

THE TECHNIQUE OF PAINTING

Cennino Cennini, a document of inestimable value, describes the methods of painting at a period when instruction in art was often shrouded in mystery, although Italian painting manifested a splendid vitality. Would that every fine period of art had left us a kindred work on its technique!

This treatise teaches the art of painting in fresco and tempera, scrupulously, minutely, and sometimes artlessly in its details and counsels, and shows the slowness and thoroughness of a complete education.

In Chapter *civ.*, the worthy Cennini, who was aged eighty, and was in prison for debt when he composed his treatise, wrote these lines:—

“Know that this is the term of time necessary to learn. First, a year to study elementary drawing upon tablets. Six years thou must spend with thy master in his workshop, to become acquainted with all the branches of our art, beginning with grinding colours, boiling pastes, kneading plaster, then becoming skilful in the preparation of panels, enriching them, polishing them, putting on gold, and graining them well. After this, thou wilt need six years more to study colour, and gilding with mordants, to treat draperies with gold and to practise working upon walls, and all this time thou must draw incessantly, never laying aside thy drawing either on festivals or working days. Thus a natural aptitude becomes, by perpetual practice, excellent skill. Otherwise, whatever path thou mayest follow, hope not to attain perfection. There are many who say that they have learnt their art without apprenticeship to the masters. Believe it not. I will give thee this book as an example; if thou wert to study it day and night without working under some master, thou wouldst never arrive at anything, or not at anything which could make a fair show if placed by the works of the great painters.”

Thus, in those days it took thirteen years to become a painter. And this term was considered a moderate one. Cennino declares that Taddeo

CENNINI'S TREATISE

Gaddi remained for twenty-four years in Giotto's workshop. As the education of the artist began when he was about ten years old, and sometimes before, the young painter might hope to be a master of his art when he was twenty-five.

Cennino develops his system gradually from drawing to grinding and making colours; he studies the various processes known: fresco, tempera and even oil, which was already in use, and says in passing, with reference to the proportions of the human body: "I will say nothing of woman, for no single measure of her body is perfect."

Painting on these methods, clear, limpid and brilliant, aimed at splendour, precision, and lucidity. It knew nothing of landscape, chiaroscuro, or perspective.

Cennino does not advise students to go and look at mountains: "If thou wouldst paint mountains in a good style and to look natural, take some large stones full of cracks and copy them." Landscape inspires this recommendation: "When thou hast covered the trunks of the trees with black, draw the branches, put the leaves above and the fruits afterwards; on the grass put a few flowers and some small birds."

His instructions concerning perspective are very brief: "The cornices thou makest on the top of buildings must diminish from above to below as they descend; the cornice in the middle of a building must be equal and similar throughout; that of the base or pedestal must rise, etc."*

In spite of this lack of experience, this painting

* *Traité de la Peinture de Cennino Cennini*, translated by Victor Mottez, Paris, 1858. English translation by C. J. Herringham, 1899.

THE TECHNIQUE OF PAINTING

was noble, expressive, and sumptuous. Artists surrounded their figures with precious objects and ornaments; they clothed them in magnificent costumes, and set them against backgrounds of gold. Crivelli incrustated the cross of Christ with precious stones, Angelico, Gentile da Fabriano, Cosimo Rosselli and Pintoricchio lavished gold on their pictures and frescoes, and Alberti remarks that "some persons make an immoderate use of gold in their pictures, believing that this metal bestows a certain nobility on the subject."

The Flemings even went so far as to paint upon gold panels, but not with any idea of this sort. They aimed at giving greater solidity, splendour, and transparence to their painting. In Italy, although fresco, of course, was always painted on the wall, tempera or egg-painting was executed on panels of lime or willow wood. Cennini describes how on these panels canvas was pasted, which was afterwards overlaid with a plaster ground. Vasari attributes the invention of canvas stretched over panel to Margaritone of Arezzo, a painter of the thirteenth century; but the process had been known long before this, for it is described by Theophilus and by Eraclius; the Byzantines practised it, and Egyptian sarcophagi have been found, painted on a plaster ground overlying a canvas applied to the wood.

The colours used differ but little from the antique pigments: ochres, yellow and brown earths, orpine, cinnabar, malachite, terre verte, verdigris, whiting, and white lead.

Cennini speaks with much solemnity of ultramarine, which was very expensive, and a frequent

CENNINI'S TREATISE

subject of dispute between artists and patrons ; its use was regulated by contract.

He says not a word about palettes ; in fresco as in tempera, painters seem to have used only little jars, in which the colours were already prepared. When he gives instructions for painting faces, draperies, and trees, he mentions each of the mixtures to be used, recommending that they should be prepared in three and sometimes even in four separate jars, the first containing the high tone, the last the dark, the others the intermediate tone or tones. Over a very careful drawing, the artist began by painting all the portions in shade ; he then put in the half tones and finally the high lights. He thus distributed the same tonality throughout his work, and went on to the half tones only when he had finished all the shadows. The sketch was unknown. But as the artist had often to go over his work again and retouch it, fresco was re-touched dry, with tempera, that is to say, with colour mixed with egg.

Unfortunately, Cennini deals more curtly with the question of varnishes, although he very rightly advises the painter to wait as long as possible before varnishing his picture. He does not give the composition of the varnish then in use, of which indeed he may have been ignorant.

At this period the painter was almost perfect as a technician.

Cennino Cennini devotes several chapters to the application of ornaments in relief to walls and panels. This taste for actual relief led to a new science, that of perspective.

This science, created by Brunellesco, was received

THE TECHNIQUE OF PAINTING

with general enthusiasm. Painters, and even sculptors, took it up. Ghirlandajo, Masaccio, Paolo Uccello, Piero della Francesca and Mantegna studied it with delight. Mantegna created the art of foreshortening figures. Paolo Uccello could not sleep at night for thinking of it, and exclaimed to his wife, surprised to see him wide awake: "How beautiful is this perspective!"

At the same time the taste for *camaïeu* and *grisaille** initiated the feeling for chiaroscuro. After an over-exclusive pre-occupation with the intensity and clarity of their tone, painters, practising in monochrome, learned to distinguish the relations of values, and to perceive that tone was a relative quality. We have already seen how in antiquity the vogue of *grisaille* coincided with the study of gradation and modelling, the introduction to chiaroscuro.

Leonardo da Vinci gave a great impetus to the study of chiaroscuro. But his very curious *Treatise on Painting*, in which literature and ingenuity predominate, lacks technical instructions.

Mons. Péladan has rendered students and scholars a service in giving them a new French edition of this work.† He classifies and numbers the thoughts and sections in a more logical order than that of the old editions, and accompanies them by a brilliant and erudite commentary. Mons. Péladan is surprised at the indifference of painters to Leonardo's *Treatise*, which he would like to see

* *Camaïeu*, the use of two tints; *grisaille*, a monochrome of gray or brown.

† *Traité de la Peinture, par Léonard de Vinci* (translation and commentary by Péladan). Various English versions of it have appeared, one among Leonardo's other literary works, edited by Dr. J. P. Richter, 1883.

CHIAROSCURO AND OPAQUE PAINTING



1. Transparency of shadows due to chiaroscuro. Fragment of the St. JOHN, by LEONARDO DA VINCI (*The Louvre.*)



2. Exact values without transparence : ENTOMBMENT, by RIBERA (*The Louvre.*)



LEONARDO'S TREATISE

"in the studio of the pupil and in that of the member of the Institute." Leonardo's thoughts are more interesting to dilettanti than to practitioners, and to tell the truth, Mons. Péladan's commentary will attract more attention than the master's text.

It was no longer a period such as that when Cennini was able to speak plainly and say how an artist was to paint. The old processes of fresco and tempera were in conflict with a new process, as yet imperfectly known and practised. A writer dared no longer say as before, do this and do that. Leonardo, the most learned but the most vacillating of men, abounds in suggestions, rather theoretical than practical.

By a curious analogy he shows the same mixture of genius in vision and hesitation in technique which was to appear later in the painter Delacroix. Like the master of the *Taking of Constantinople*, the master of the *Gioconda* announces a new ideal, which he fails to translate brush in hand.

We read in his *Treatise on Painting* :—

"The first aim of the painter is to make it appear that a round body in relief is presented upon the flat surface of his picture ; and he who surpasses others in this respect, deserves to be esteemed more skilful than they in his calling. Now this perfection of art comes from the true and natural arrangement of light and shade, or what is called *chiaroscuro* ; thus, if a painter dispenses with shadows where they are necessary, he wrongs himself and renders his work despicable to connoisseurs, to win the worthless applause of the vulgar and ignorant, who look only at the brilliance and gaiety of the colour in a picture, and care nothing for the relief." (*What should be the first object and the principal aim of a painter ?*)

Again he says : "What is beautiful is not always right. I say

THE TECHNIQUE OF PAINTING

this for certain painters who give so much to the beauty of colour that they put scarcely any shadows; and those they do put are always very slight, and hardly perceptible. These painters, contemning our art, attach little importance to the relief which strong shadows give to figures. In this they resemble those fine talkers who say nothing to the point." (*Of the degrees of tints in a painting.*)

Such words proclaimed a revolution in the manner of seeing and of painting. After the joy of colour, the poetry of values was making itself felt. A purely material advance was about to facilitate these novel essays.

The Beginnings of Oil-Painting.

In antique times attempts had been made to mix colours with oil. The tenth-century manuscript of Eraclius, quoted above, describes the fabrication of oil for grinding colours, and after giving directions for the preparation of panels, the writer adds: "You might paint on them in colours moistened with oil."

Theophilus again, in the twelfth century, describes the preparation of oil colours and of varnishes. "Take," he says, "the colours you wish to use, grind them carefully with oil, without any water, and make mixtures of colours for figures and draperies, as you have done above with water, and you will be able to paint as you please and in their natural colours, animals, birds and foliage."

Theophilus admits that: "Every time you have to apply a colour, you will not be able to lay on a second till the first is dry, and this, in pictures, is too slow and wearisome."

When we come to Cennino Cennini, that is, to

BEGINNINGS OF OIL-PAINTING

the fourteenth century, the process has been perfected. One detail is particularly striking. Cennino writes :—

“ I will teach you how to paint in oil on a wall or a panel, which painting is in use among the Germans.” He knows that colours mixed with oil are used beyond the Alps ; but it is clear that he does not know how.* The method he expounds in several paragraphs of his treatise consists in laying glazes of transparent oil colour over a first modelling in tempera. Thus, prescribing the manner of painting fish in the water, he says they should be painted and modelled in tempera, and adds : “ After a time, when all this is dry, pass over the whole a layer of verdigris mixed with oil.” This is not yet quite the complete process of oil-painting, but it was a transitional method very widely adopted at this time in Italy, for we find a great many pictures of the period either partly or entirely painted in this fashion.† This method preceded the so-called method of Van Eyck, which Antonello da Messina introduced into Italy.

In general, painters used oil which they had boiled or had reduced by exposing it for a long time to the sun, and this viscous oil made it difficult to mix the colours and to dry them promptly.‡

* There is no doubt that the North of Europe was in advance of the South. See *Origines de la Peinture à l'huile*, by Dalbon, on contracts dated 1320 and 1350, according to which, in Artois and Normandy, decorative paintings were ordered in fine oil colours. Yet Vasari dates the perfecting of the process and the invention of the Van Eycks 1410!

† See, for instance, in the Louvre, Ghirlandajo's *Visitation*, where the draperies are painted with egg and overlaid with flat oil glazes of the same tone ; all the modelling is done in the egg foundation.

‡ Easel pictures were dried in the sun, and braziers were kept alight in front of wall paintings. As early as the thirteenth century there is a record in England, in the reign of Edward I., of coals provided to dry the paintings in the Queen's chamber. In France, various documents speak

THE TECHNIQUE OF PAINTING

Painting in oils was practised, but it remained an inconvenient process. The action of oils upon colours and that of colours upon oils varied greatly. The desideratum was a vehicle which should render all colours equally pliable and easy to dry. During the splendid period of the precursors, from Cimabue to Perugino, oil was largely used in conjunction with tempera, and we often detect its presence over the hatchings of paint mixed with egg, in the transparency, the brilliance, and the vitreous polish of certain parts.

Mérimée has said very justly: "The perfecting of processes had gone so far that the discovery of oil-painting had become more or less inevitable, and we might fairly feel surprised that it did not take place simultaneously in all countries where art was cultivated with any success." *

This glorious invention is wrapped in a mystery which threatens to remain impenetrable. Oil-painting, brought to perfection by the brothers Van Eyck, suddenly produced works superb in their technique.†

Artists were fired with an ambition to practise in their turn the marvellous process, the powers of which had been demonstrated by the splendid talent of the Van Eycks. They painted in oils because they were told that the Van Eycks painted in oils, and they believed they were painting, or at

of logs for fuel, and firewood, to dry mural paintings (Dalbon, *Origines de la Peinture à l'huile*).

* *De la Peinture à l'huile*, by Mérimée, 1830.

† Some writers (see Dalbon's *Origines de la Peinture à l'huile*) assert that the principal improvement introduced by the Van Eycks was the production, by the addition of an essential oil, of a fluid, limpid varnish which dried quickly. This they mixed with their colours. Before their time, varnishes were sticky, difficult to apply and to dry, and full of resin. They were applied by friction with the hand over the picture, which was warmed to receive them.

METHOD OF THE VAN EYCKS

any rate, professed to be painting, like the Van Eycks. They did, indeed, imitate their processes, but they did not really know their secret. Everything tends to prove that the Flemish protagonists carried this with them to the grave.

All that seems certain is that the Van Eycks used a preparation made with size, that they sketched in their subject in a single tint, transparent enough to let the white preparation show through. They then painted with a substance that was loaded with resin and moistened with oil. This very thin, supple and delicate material, brilliant as a precious stone, has the appearance of a brittle substance, a kind of varnish, when scales of it are submitted to examination.

It is probable that this varnish, incorporated with the colour itself, preserved its limpidity together with its solidity. This is, no doubt, the great secret of the Van Eycks.*

On the other hand, since 1450, the date of their death, it has been the general practice to paint in oil on oil primings in thick layers, finally coated with a varnish which does not form a homogeneous body with the stratum of colour. Such appears to be the error which has endured ever since painters claimed to be making use of the process invented by the Van Eycks.

It may be noted, however, that in Flanders the process of the Van Eycks was imitated more successfully than elsewhere, although it was not

* It is supposed that the improvement consisted in grinding and then soaking the colours in a somewhat liquid, oily varnish, with a basis of amber and mastic, and perhaps also of sandarac, to which was added a siccatif, white vitriol or burnt bones, to the exclusion of lead, which would have injured the colours.

THE TECHNIQUE OF PAINTING

perfectly known. The masters who came after them continued to produce pictures the substance of which remained supple and limpid, and capable of resisting the ravages of time. This continued until the time of Otto Venius, and even to that of his pupil, Rubens, who practised the same methods in his early works.*

The purity and solidity of the materials used by painters were not wholly due to their minute and learned technique, and to their desire of leaving durable works; the result was also to a great extent brought about by the severe regulations framed by associations, guilds and bodies of master-painters. These academies imposed fines on artists whose materials were not good in quality.

I take the following, among many such examples, from the charter of the master-painters of Ghent :†

ART. IV. Every painter received into the corporation shall work with good flesh colour upon stone, canvas, panels with shutters or other materials, and should he be found in fault, he shall pay a fine of 10 *livres paris*.

ART. VI. If, in any work to be executed in azure and best sinopis, he shall be found by the dean and the jury to have cheated with the materials, the delinquent shall incur a penalty of 10 *livres paris*.

ART. X. Juries are expected to make domiciliary visits at all times and in all places, like good and careful inspectors, to see if any of the foregoing articles have been violated, or if any other infraction of the rules has been committed, and these visits are to be carried out without opposition from anyone.

It is always the most orderly communities which are most careful to organise their police effectively,

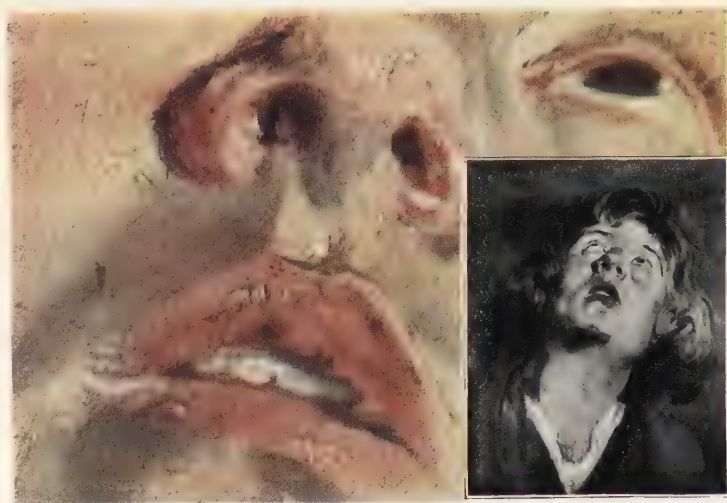
* See *La Science de la Peinture*, by Vibert.

† Others will be found in Dalbon's *Origines de la Peinture à l'huile* (Perrin, Paris).

TWO DIFFERENT HANDLINGS, 15th AND 16th CENTURIES



1. Fragment of an oil-painting. Handling smooth and equal: CONDOTTIERE, by ANTONELLO DA MESSINA. (*The Louvre.*)



2. Handling in which the high lights are loaded, and the shadows thinly painted: Fragment of St. JOHN, by RUBENS. (*The Louvre.*)



EARLY PAINTERS IN OIL

although this is less necessary in their case than elsewhere, and it is always in the most perfect periods that the most stringent precautions are taken against possible lapses. As soon as decadence sets in, precautionary measures disappear, as if to precipitate the downfall.

In Italy, oil-painting by processes based on the manner of the Van Eycks began to be practised by masters who were able to compound a limpid and durable material. Antonello da Messina defied the centuries in his *Condottiere* in the Louvre. He is said to have been the propagator of the process evolved at Bruges. The Venetians and the masters of Northern Italy adopted it enthusiastically. They appreciated its transparency, its warmth of tone, the facilities it afforded for touches that give modelling and relief.

Lorenzo di Credi purified and distilled his oils with the utmost care. He mixed on his palette the dark and light tones which give gradation in modelling.* "Indeed," says Vasari, "he was over-particular, for sometimes his palette was loaded with twenty-five or thirty of these tones, for each of which he kept a special brush. He was in such terror of dust that he would not allow the least movement to be made in his studio."

Amico Aspertini discarded the palette, used pots as for fresco, and fastened them round his body with a belt. "He was like the devil of San Macario," says Vasari, "with his rows of little boxes."

* The Primitives used several palettes, each devoted to different tones. On each palette there was a tone, in various gradations, and the artist applied this one tone throughout his picture before going on to another. This was the method of the illuminators, which the greater facilities of oil painting soon superseded.

THE TECHNIQUE OF PAINTING

We see that the methods of the ancient schools, all their precautions with a view to solidity and perfection, were observed in Italy as in the North. The newly initiated—those who had received the secret from Antonello—did not quite forget their early education, and all its honest and conscientious ideals.*

Pollajuolo, Perugino, Verrocchio and Ghirlandajo painted in oils. The process was transmitted and became popular. It was useless for Michelangelo to treat it with scorn, as an art "fit only for women"; it invaded panels and walls; canvas even began to be reserved for it. The Venetians appreciated this lighter and more manageable surface, which enabled them to execute works of large dimensions in their studios.

But, as artists mastered the process more absolutely, they acquired greater assurance, and showed greater audacity in its use. The material, less stubborn than that of fresco, permitting more freedom in re-touching and correcting, tempted them to take liberties. Gradually, traditions were broken down, and a spirit of independence asserted itself. Each painter claimed the right to innovate and to assert himself. Schools multiplied and competed with each other. Artists projected vast compositions in oil as formerly in fresco. Soon Tintoretto, Veronese, and Giulio Romano covered gigantic surfaces. Painting became more expeditious, but at the same time more summary and less sincere.

* We know now that, in spite of the legend, Castagno, who shared the secret of oil-painting with Domenico Veneziano, did not murder his colleague that he might remain the sole repository of the secret. It is even asserted that Domenico never knew Antonello, and that he painted in oils according to the method of Cennini.

VICES OF OIL-PAINTING

It attained its most magnificent period, that in which, its means of expression almost perfect, it produced its superb masterpieces. But this moment was brief. In a few years a decadence in technique became apparent.

The desire to fuse colours, to get a mellow effect and richer modelling, resulted in darkness and even in blackness. Leonardo da Vinci, the harbinger of chiaroscuro, was also its victim.

In his desire to oppose shadows to light, and to obtain depth and mystery, he strove insistently to find darker depths for his grounds. The *Gioconda*, which Vasari describes as so fresh, vivid, and rich in colour, is now hardly more than a monochrome drawing. All his pictures have darkened.*

Apogee and Decline of Oil-Painting.

Disasters began to threaten at a very early period. Even during the Renaissance, painting was already manifestly compromised by varnishes, by the use of unstable colours, by unhappy experiments, by a technique less traditional, less safe than that of the past.

At the supreme moment in the history of painting, when such masters as Titian, Leonardo, and Raphael were still living, the new methods were already condemned by contemporaries. Masterpieces were still to be born, but they all carried within them from their birth the germs of disease and death.

Two methods of execution obtained. This was the first: On a monochrome under-painting, a

* See on p. 161, the passage about *La Gioconda*, the evaporation of the reds, etc.

THE TECHNIQUE OF PAINTING

kind of brush-drawing, shaded and modelled in brown tones over white, the colour-scheme was applied in an even impasto. This method of the Flemish masters was followed in Italy by the Florentines and the Romans, Perugino, Leonardo, and Raphael. They put solid layers over transparent ones, their object being not only to get transparent undertones, but to obtain a kind of radiant base; sometimes they laid a sheet of gold-leaf over the gesso priming, and painted upon that.* The Venetians adopted the second manner: Titian finished his under-painting in a full impasto, and went over it afterwards with glazes. He did not, however, discard tempera, and size for his primings; but whereas the Flemings chose light preparations, Titian sometimes painted on a red ground; Correggio, it is said, even drew out his subject sometimes in *grisaille*. We shall see that these two methods became very popular later on.

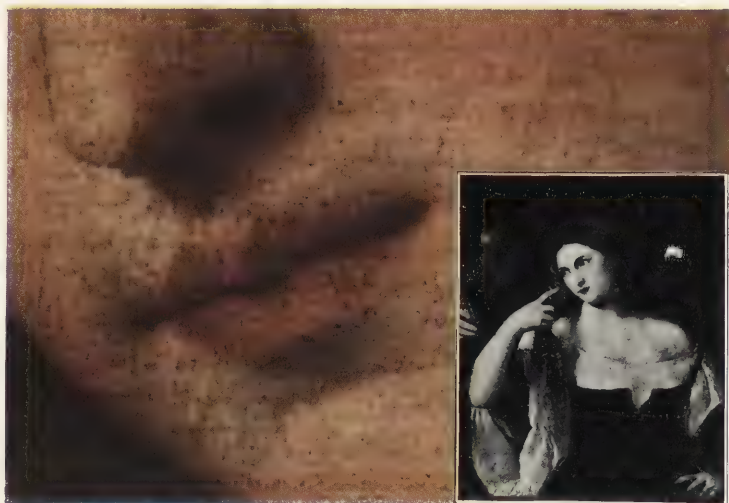
The blocking out in a full impasto allowed of free modification and alteration, whereas the first method confined the subject definitely to the drawing made upon the preparation. Among the Venetians, the initial ardour and liberty were gradually subdued to admit of final subtleties and refinements, whereas among the Flemings prudence and method advanced step by step on a path already marked out.

Glazes laid on transparently were not, as we have seen, a novelty; but the complete process of oil-painting made them easier.

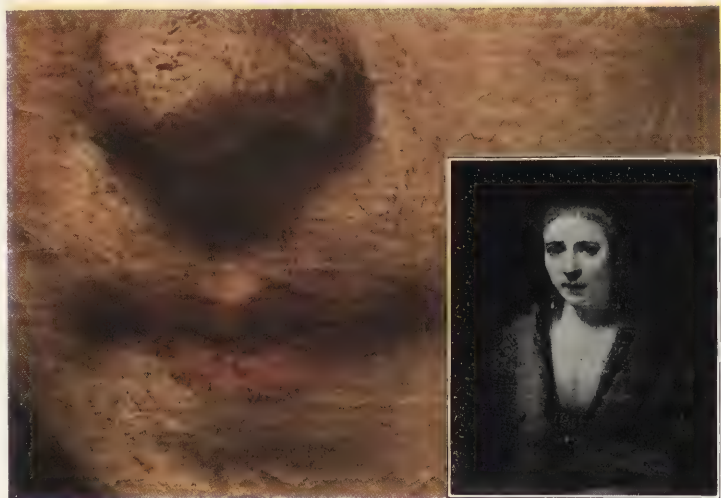
Nevertheless, charming as were the transparent

* This was done in Rogier van der Weyden's triptych at the hospital of Beaune. The Primitives, who hoped to make their works more durable by this device, exposed them, on the contrary, to the cupidity of vandals, who often destroyed them to get the gold from the priming.

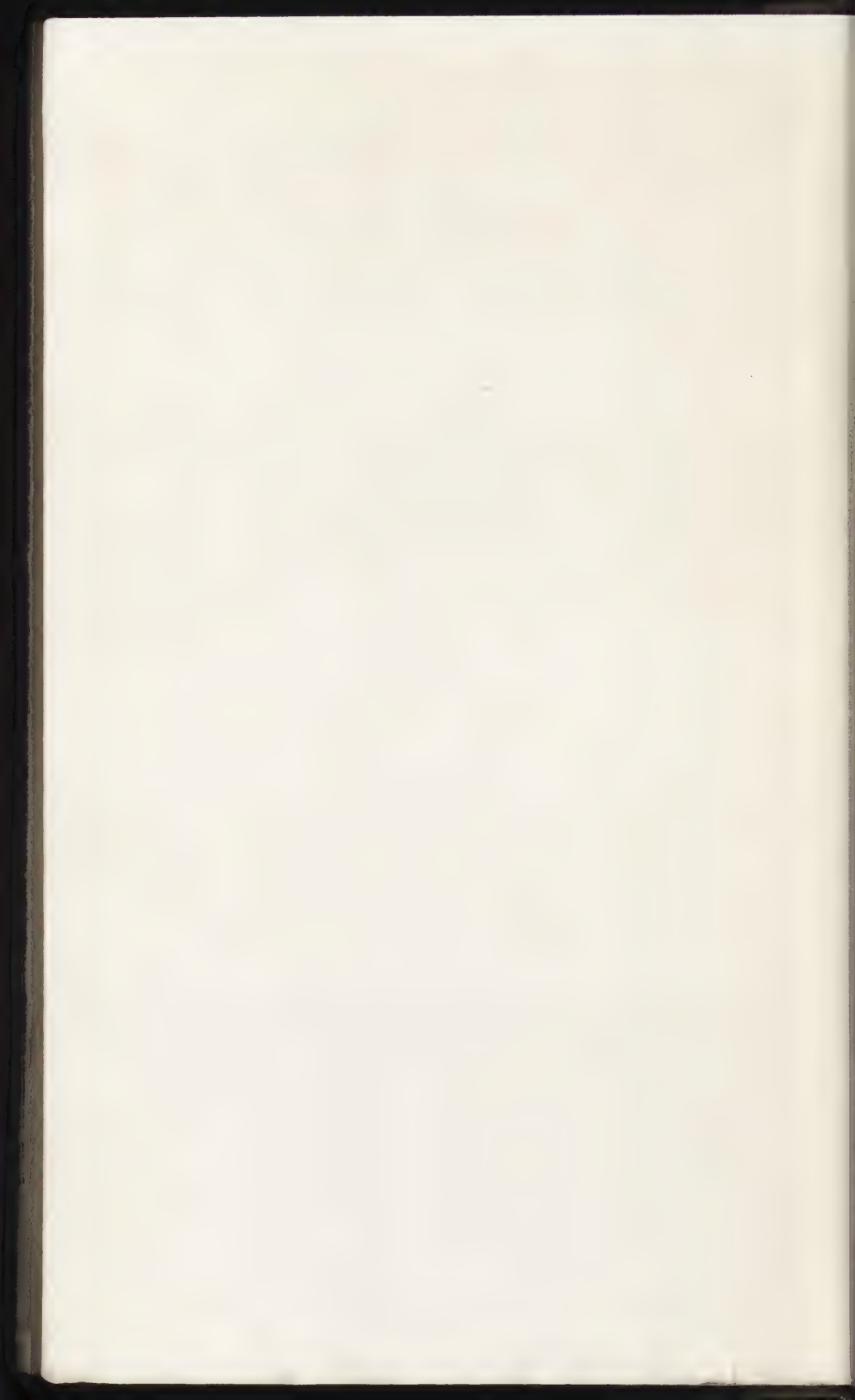
GLAZES WITH OR WITHOUT CHIAROSCURO



1. Broad handling, impasto covered with glazes without chiaroscuro :
PORTRAIT OF A WOMAN, by TITIAN. (*The Louvre.*)



2. Impasto covered with glazes, with chiaroscuro, which emphasises the
modelling : HENDRICKJE STOFFELS, by REMBRANDT. (*The Louvre.*)



METHODS OF RUBENS

effects produced by glazes of oil upon oil, painters soon recognised their fragility, and refrained from applying them to any but those portions of their work which would not suffer from the bistre tone they produced. Caravaggio, for instance, painted evenly throughout his picture in a full impasto, and only glazed the draperies and shadows.

Meanwhile, Rubens, in Flanders, was still sketching lightly on panels prepared with distemper; sometimes, but more rarely, he painted upon canvases with a light gray oil-priming, as in the Louvre series, the *History of Marie de' Medici*.

He followed in the wake of the Primitives; his pencil drawing, which was gone over with the brush, was heightened with a brown wash. His free handling, thin in the shadows, loaded in the lights, was to become traditional and classical; insisted on by all the manuals, transmitted from professor to professor, it has, nevertheless, not been permanently adopted.

Rubens' smooth, glazed manner has been studied by Mérimée, who rightly concludes that "Rubens did not paint with colours prepared like ours, but overlaid his panel with an unctuous matter, liquid enough not to check the movement of the brush, viscous enough to pick up the colour and make it adhere, and at the same time greasy enough to arrest the tendency of certain colours to spread beyond the place to which they are applied."*

* Mérimée writes further: "Rubens often painted his compositions directly upon very smooth panels. He put very little colour in the shadows, and even in the half-tones; it is only in the high lights that we see loaded touches."—*De la Peinture à l'huile*, by Mérimée.

Cf. Fromentin, *Les Maîtres d'Autrefois*. This is what he says of Rubens: "His colours are very summary, and only appear complex because of the manner in which they are turned to account by the master, and the part he makes them play. None of Rubens' tones are very remarkable intrinsically. . . . If you take

THE TECHNIQUE OF PAINTING

In the works of Van Dyck we see impasto taking the place of his master's "sauce" for the first sketch; however, he remained throughout more prudent than Titian in the use of glazes, and also more prudent than Rubens in the use of vermilion, which he knew to be perishable.* We may see his sketches in *grisaille* in all museums.

Rembrandt in his early period essayed the smooth impasto of Van Eyck; at this time he formed a pupil, Gerard Dow, who was as scrupulous as any Primitive. But very soon Rembrandt allowed himself to be carried away. He piled up his impasto impulsively, without method or precautions, trusting to glazes to correct his errors and distractions.† His genius had flights which defy all rules, and rises to the sublime by means well fitted to keep it chained to earth. His very individual technique remains his own, as Michelangelo's remains that of Michelangelo.

The art of the other Dutch masters, if less inspired, is not less mysterious. Fromentin has well said: "Their colour, their chiaroscuro, their modelling of relief, the play of ambient air in their works, and finally their handling, all are perfection

one of his reds . . . it is made up of vermilion and ochre, very little broken, just as they were first mixed. If you examine his blacks, you will find that they were taken from the pot of ivory black, and that, mixed with white, they serve for all the imaginable combinations of his neutral and soft grays. His blues are accidents; his yellow, one of the colours he feels and handles less satisfactorily than others as a tint, save in the case of the golds, which he excels in rendering in all their warm and subdued splendour, etc." The whole of this page might well be quoted.

* Van Dyck had studied chemistry and profited by his studies. The prudence in the use of vermilion, which he bequeathed to his pupils, became so excessive in some of them that they renounced the use of it altogether. Pieter Tyssens never used it.

† In his *Twelfth Discourse*, Reynolds points out how happily the accidents arising from the use of the palette-knife were turned to account by Rembrandt, and remarks that such accidents become beauties of execution in the hand of a master.

TWO HANDLINGS CONTRASTED



1. Precision of drawing and modelling : DESCENT FROM THE CROSS, by
ROGER VAN DER WEYDEN (*The Louvre.*)



2. Expression concentrated in the eyes and mouth. THE PILGRIMS OF EMMAUS
by REMBRANDT. (*The Louvre.*)



THE FRENCH PRIMITIVES

and mystery." Reynolds declared that painters should go to the Dutch School to instruct themselves in the art of painting, just as we take lessons in grammar to acquire a knowledge of languages. He was thinking of the happy influence that the sight of these incomparable models might exercise ; but he omitted to say that no one knows how Terburg, Metzu, and Peter de Hooch painted, and as their pictures give no indication of their methods, it is impossible to guess.

In France.

In France, where the Primitive painters had adopted the Flemish technique, artistic activity, arrested for a while, recovered itself, and turned to the schools of Italy for its education. But here it found only the works of the great masters ; their successors had little talent.

As the masterpieces which governed all minds were the frescoes of Michelangelo and Raphael, fresco had continued in Italy to impose its methods, even on painters in oil. This method requires the use of preliminary cartoons, from which the painting is executed. It soon invaded all decoration on a large scale, and even easel pictures, which were more closely governed by reality.

The Flemish, Italian and French Primitives had followed these methods, even in their oil pictures, because they had not yet freed themselves from the education derived from the practice of tempera and fresco. Oil-painting allowed of alterations and re-touches, of an execution less dependent on preparation and more directly inspired by Nature ;

THE TECHNIQUE OF PAINTING

the Venetians and the Dutch had proved this triumphantly.

The French School followed the example of the new school in Italy.* All initiative disappeared. Absolute submission succeeded to the independence characteristic of the early Italian Renaissance. A classical tradition of the narrowest and most puerile kind dominated all alike. Nature was seen through the intermediary of antique sculpture and of Raphael. The result was that drawing became purely conventional, and painting, cold and lifeless, took on brown and reddish tones, due to the use of canvases with a red priming.

Poussin,† although one of the last great individualities, had no ideal but the Antique and Raphael. After him, the evil increased. The authority of his style and of his ideas—more or less exactly transmitted—added to the obstacles between Nature and our painters.‡ Artists were remote indeed from that period when Leonardo declared that “a painter should never imitate another painter, for if he does, he must be called the grandson rather than the son of Nature.”

Colour was looked upon as a secondary quality;§ its only function was to make the picture agreeable. An author who faithfully echoes the ideas of the day, Junius, writes “that painters should try to get graceful colour, such as we see

* Guido, the Carracci, and Domenichino.

† Poussin, a very conscientious painter, said of himself: “I neglected nothing.” Unhappily, he used canvases with a brown priming, and his painting has suffered in consequence.

‡ Claude Lorrain, who, although he was conventional, was the first to paint the sun, only began to influence painters such as Turner in the nineteenth century.

§ This highly intellectual period was more interested in drawing and style than in colour: exactitude of tint and animation of handling were to be the

DESIGN RANKED ABOVE COLOUR

in young persons delicately brought up and tenderly nurtured." This is a premonition of Mignard in all his insipidity.

As there is always a great deal of discussion in periods of decadence, painters organised art conferences, and Philippe de Champagne, more severe than Junius on the subject of colour, declared at a sitting of the Academy that Poussin considered pre-occupation with colour "an obstacle and a danger in the way of young people anxious to reach the true goal of painting."*

And Lebrun, in a lecture "on the merit of colour," affirmed that drawing imitates all real things, whereas colour represents only what is accidental, a reproach which the Impressionists were one day to take to themselves and transform into eulogy.

He goes even further. He argues that "the grinders of colours would rank with painters if drawing did not make a difference; for the former use colours as do painters, and know almost as well how to apply them."

"Almost as well"—is a mistake; they certainly know better, because they understand their composition, and it must be admitted that the Primitives had a right appreciation of colours, which they took care to grind themselves.

Teaching seems never to have been narrower, falser and more dogmatic. A well-known critic, Félibien, writes phrases which seem to have been

pre-occupations of a more realistic art and a more sensuous period. The eighteenth century was to introduce them. Poussin wrote from Venice: "It is time for me to come away, I feel that I should become a colourist." This phrase, which shows how little he thought of colour, also shows that, contrary to generally received opinion, he believed that a painter could *become* a colourist.

* If this were so, Poussin can have had little idea of his own meaning when he said of painting: "Its object is to delight."

dictated by a blind man.* He subordinates vision to reason, truth to nobility, and sets forth the hierarchy of styles which has held sway down to our own times.

This was the period when Teniers was despised because his drawing was not "noble," when the brothers Lenain, although members of the Academy, were scorned, when Charles Lebrun laid down the principle that "Nature must be corrected by art," and in his treatise on the expression of the passions gave formulas for the rendering of every emotion.†

The Masters of the Eighteenth Century.

Meanwhile the portrait-painters, obliged by the necessities of their art to examine and reproduce their models, were destined to become the saviours of the French School, the harbingers of the fascinating masters of the eighteenth century. Certain writers initiated the reaction against Lebrun's theories. The movement began with Charles Perrault, who, in his *Poème de la Peinture* and his *Parallèle des Anciens et des Modernes*, attacks the Old Masters, and declares that painting "is more accomplished now than in the century of Raphael himself,

* He praises Poussin for having expressed distance by grayer tones; in this he sees a sacrifice to reason. He holds that the more subdued tones are less agreeable, as if distances were not full of exquisite colour. He writes: "Nothing is so easily deceived as the human eye. . . . This is why the painter tries to make sight and reason agree."

† The following observations on the subject of *simple love* are typical: "When it is not accompanied by any violent desire, joy or sadness . . . an agreeable warmth pervades the breast, and the digestion of food proceeds gently in the stomach, so that this passion is conducive to health. . . ." A word in season to the dyspeptic! And we are told that Louis XIV. considered Lebrun "after such admirable evidences of learning, above all others, and the greatest of men."

THE RISE OF VIRTUOSITY

as far as chiaroscuro, gradation of light, and composition is concerned." By a curious contradiction, this reaction against the theories of Lebrun gives Lebrun's own painting as the model for imitation. Thus theorists continued to maintain that the painter should "be able to copy Nature without looking at it," so that the reaction which found exponents in Largillière, de Troy and Watteau—under the influence of Rubens, whom the world was beginning to admire—preserved the artificial tendencies which governed the School, in spite of everything. "To be able to copy Nature without looking at it" remained like an echo in all memories.* Painters were expected to be brilliant and ingenious; simplicity was a fault to be avoided. The impetuosity of work without a model induced a taste for accomplished handling, for agility with the brush. To give variety to an execution which the absence of Nature made monotonous, artists set to work to paint by strokes and facets; they sought to awaken interest by virtuosity.† The smooth material of the seventeenth century was succeeded by a loaded and uneven impasto, glazed after the manner of the Venetians, where the visible traces of the process were emphasised. The Primitives had laid down the principle that the spectator should

* Reynolds tells how, when he went to see Boucher, he found him working on a very large picture, for which he was using neither models nor sketches of any sort. When Reynolds expressed surprise, Boucher replied that in his youth, and when he was studying his art, he had considered the model necessary, but that he had not now used it for a long time.

† "It is the touch which gives life and movement," wrote Tocqué (*Réflexions sur la Peinture et particulièrement sur le genre du portrait*, MS. in the library of the Ecole des Beaux Arts). Compare the execution of one of the heads of young girls printed by Greuze (Louvre) with any of Mignard's portraits. Greuze models even the cheeks of a young girl by facets.

THE TECHNIQUE OF PAINTING

not be able to see how the picture had been painted; these later artists emphasised the traces of their labours for all beholders.

We shall see how this manner was transmitted and how, a hundred years later, it culminated in a kind of handling that revolutionised technique.

The picturesque began to enter by degrees into the manner of painting, and to play a primordial part in it. This pre-occupation with the march of the brush began with Rubens, Rembrandt, Frans Hals, Brauwer, and Teniers; but these pioneers yielded to an involuntary impulse. The great artists of the eighteenth century, on the other hand, gave themselves up to a delirium of handling, and this affectation of negligence became a method of attraction which was employed more and more every day, in spite of fitful reactions. The initiated looked closely at the picture and admired the handling; this gave them a special pleasure, independent of the subject treated. Painting became a kind of rhetoric.

The intellectuality of the seventeenth century was succeeded by a sensuousness which was to give a new interest to colour and to the technical part of painting in general.

Colour once more engaged the attention of artists and found favour with them. Oudry, in a lecture delivered at the Academy, *Réflexions sur la manière d'étudier les couleurs en comparant les objets les uns avec les autres*, shows traces of this novel absorption, and of Largillière's influence in this revolution. Here is an extract from his discourse. It is worth quoting, and in spite of some shortcomings, is still good reading, as

LARGILLIÈRE ON MODELLING

well as very remarkable for the date when it was written :—

“ I remember,” says Oudry, “ a circumstance that happened when I was with Largillière. He said to me one morning that one ought to paint flowers occasionally. I went at once to fetch some. I thought I was showing great intelligence by bringing some of every colour. When he saw them, he said : ‘ It was to form you in colour that I proposed this study. But do you think that the selection you have made will further this object ? Come,’ he added, ‘ get a bunch of flowers all of which are white.’ I obeyed at once. When I had placed them before me, he came and stood by me ; he set them against a light background and began by pointing out that, on the side of the shadow, they were very brown against this background, and that on the bright side they stood out against it in half-tones, for the most part rather light. Then he put against the white of these flowers, which was very white, the white of my palette, which, as he showed me, was whiter still. He made me recognise, at the same time, that in this bunch of white flowers, the high tones which required to be touched with pure white were not very numerous, compared with the passages in half-tones, and that in fact there were very few of them ; he showed me that it was this which formed the relief of the bouquet, and that the apparent roundness of any object to which one wishes to give relief depends upon this same principle. That is to say, that one can only get these effects by broad half-tones, and never by spreading the first high tones. After this he made me sensible of the strong touches of brown in the

THE TECHNIQUE OF PAINTING

centre of the shadow, and the places where they were without any reflections. 'Very few of our painters,' he said, 'have dared to render the effect you have here, although Nature shows it to them every moment. Remember that this is one of the great keys to the magic of chiaroscuro. Remember also that to accentuate their colour makes your object brilliant; and finally, you may take it as a general rule that all you can do by this artifice will be much better than trying to get the effect by the thickness of the colour, because, being applied on a plane surface, it cannot help your effect, and can only be harmful to it, except in very rare cases.' "

In *Réflexions sur la pratique de la Peinture*, another lecture of Oudry's, the MS. of which I have been able to consult at the Ecole des Beaux Arts, thanks to the courtesy of the learned librarian, Mons. Marcheix, there are certain indications which throw light upon the approved methods of painting at this period.

Oudry condemns red-brown as a priming; painters were then beginning to recognise its dangers.*

But he also condemns white primings; he asserts that they come through, and destroy the shadows and half-tones. He reprobates the use of any pure colour, yellow, brown, etc., and recommends priming in half-tones. "A tone," he says, "always asserts itself."

* Nevertheless, its use persisted. Generally, a priming of red-brown mixed with umber was applied, or one of pure umber. At the end of the eighteenth century (from 1750 to 1780), litharge was added to accelerate drying, and pictures were covered with little salient specks, the grains of ill-ground litharge.

EIGHTEENTH-CENTURY TECHNIQUE

In another discourse he condemns the use of *grisaille* for blocking in the subject, both as material and as colour, again because of the white in it. He declares that *grisailles*, owing to the copious intermixture of white in them, always remain separate from the painting above, and never bear it out ; white dries quickly, becomes very hard, and consequently does not become incorporated with pigments laid over it. Besides, as we have seen above, he declares that it always comes through.

A good under-painting, he thinks, should not be a thin rubbing, but an impasto which will give a solid foundation.

He says a good deal about oil, and recommends an abundant use of it. When painting over, he advises the painter to varnish the under-painting lightly first, but he does not say with what.

He approves the preparation of tones beforehand on the palette with the palette-knife, for gradations, and he adds : " I should wish you never to make them without inspecting the model." This phrase reminds us how usual it was to paint without the model.

It should be pointed out that Oudry always uses the word *brown* to indicate shadows (as in his account of the lesson in flower-painting given by Largillière), and this recalls the reign of a brown tone to colour every kind of shadow. On the other hand, he merely says " les clairs " (the light tones) for all the brilliant parts.

Oudry's advice reveals most excellent theories ; add to these the general influence of light due to the white decoration of interiors at this period,

THE TECHNIQUE OF PAINTING

and the material examples given by gifted artists such as Watteau and Chardin, and we shall not be surprised to find a better technique during the eighteenth century. Methods, no doubt, still had their faults. Paint tended to whiten rather than to blacken.* It owed this freshness to some extent to an immoderate use of essential oils; but it had to pay for this by crude tones with a tendency to work through. On the whole, the material has stood well, when it has not been mixed too freely with fixed oils; and, as a rule, it does not deteriorate, save as a consequence of accidents due to the preparation of the canvas or varnish—a deterioration not directly attributable to the work of the artist, but to his carelessness in the choice of his materials.† As far as technique is concerned, this was the best period of French painting, and one of the best in the whole history of oil-painting. The harmonious colour, frankly applied in a rich impasto that was never heavy, was warmed and refined by subsequent glazes.

The most brilliant of its representatives, as technicians, were Watteau and Chardin. Watteau had studied the Rubenses in the Louvre with deep attention. Mons. de Caylus tells us this in a study, in which, unfortunately, he dwells upon Watteau's

* The following was Greuze's method of painting, as given by Mérimée, who had it from a well-informed person: "He always sketched a head in with a full impasto; when he wanted to paint over this sketch, he began by glazing it all over, and carried it further with transparent colours mixed into an unctuous paste, by the help of which his painting dried without sinking in. After this preparation, which he executed very rapidly, he modelled the head completely, beginning by putting in the high lights and arriving progressively at the shadows" (Mérimée, *La Peinture à l'huile*).

† Referring to canvases, Oudry remarks: "We are very negligent in this respect; the tradesman who sells them thinks only of profit, and sometimes the painter who buys them thinks only of saving" (*Réflexions sur la pratique de la Peinture*, MS. at the Ecole des Beaux Arts). Painters were already beginning to reproach their tradesmen.

PERFECTION OF SKILL IN 18TH CENTURY PAINTING



1. Supple lights, delicate shadows.



2. Supreme dexterity of handling : THE BATHERS, by FRAGONARD
(The Louvre.)



CHARDIN'S TECHNIQUE

bad habits rather than his good ones. He accuses him of having sometimes used oil to excess, and of having lost something of his magnificent technique in the process. He liked to paint rapidly, and "to accelerate his effect and his execution," he painted "greasily."

"It was his habit," says Caylus, "when he worked over a picture, to rub it all over with oil, and to paint into this. This momentary advantage injured his pictures very considerably in the long run, and the injury was still further increased by a certain uncleanliness of habit which must have affected his colours. He very rarely cleaned his palette, and often went for days without re-setting it. His pot of oil, which he used so freely, was full of dirt and dust, and mixed with all sorts of colours which came out of the brushes he dipped in it."

Mariette also says: "He was not very particular in the matter of cleanliness, and this, added to his abuse of oil, has done a great deal of harm to his pictures. Nearly all of them have suffered. They have lost the tone they had when they left his hands."

Gersaint, who also knew him personally, deploras his abuse of oil, and adds: "It must be admitted that some of his pictures are perishing in consequence day by day, that they have changed colour completely, or have become very dirty, and that nothing can be done to mend matters; but, on the other hand, those which are free from this defect are admirable, and will always hold their own in the finest collections."

Chardin, less nervous and perhaps more

THE TECHNIQUE OF PAINTING

methodical, used a limpid, harmonious and safe material, which excited the admiration and the curiosity of his contemporaries. He was supposed to have technical secrets. It was reported that he put on the paint with his thumb, and that he had a receipt for keeping half-tones transparent.

Here, by way of a curiosity, I subjoin the receipt which Cochin claimed to have known, and which he transmitted to Belle:—

“Tint for harmonious effect in a picture, of which Mons. Chardin made excellent use: lake, Cologne earth, ultramarine ash, and Italian pink. When the picture is finished, the painter should go over it again with these tints to harmonise it all. I have heard Mons. Chardin say that with these pigments, well and variously modified, he went over all his shadows, no matter of what colour they were. It is certain that this master was, of all the painters of his century, the one who best understood the magic harmony of a picture.”
—*Archives de l'Art français*, Vol. II.

Chardin's method seems to have been simpler than this: it consisted in putting echoes of neighbouring tones upon objects. By this means he invested even his white tones with distinction. “Chardin's whites!” said Decamps; “I can't find any.”

Chardin accentuated his manner in his supreme works, his beautiful pastels. He came at last to put on spots of pure colour, decomposing a tone into its several elementary colours. This method, which he used at first very discreetly, will be noted later; it will be seen that it augments the vivacity and brilliance of a tone. It is probable that the practice was not deliberately adopted by him, as it was by his imitators; but that it was more or less accidental, a result of the ardour of execution in a

QUENTIN DE LA TOUR

process which gives the artist tones that are easy to apply and to leave intact. We have already remarked more than once that transformations in the manner of painting, and even sometimes in the artist's vision itself, have been the purely material consequences of a new method; people discuss and note the novelty after it has been unconsciously practised.

Pastel seems to have influenced the painting of this century in more ways than one.

This new process, which became at once of capital importance, is said to have been invented at Erfurt by a certain Thiele, who lived from 1685 to 1752. It is also attributed to Madame Vernerin and to Mlle. Heid, Dantzic artists of the same period. Its popularity was due at first to Rosalba, and then to La Tour. Dumoustier had already made use of it a hundred years earlier, but very timidly, in simple touches and rubbings on his drawings.

La Tour's success caused much uneasiness to the oil painters, who set to work to imitate the soft effects of pastel.* And oil-painting became pasty, a kind of cream cheese. It may be also that pastel, in which, as La Tour said, it is so hard to let well alone, seduced artists into the methods of the improvisatore.

There was yet another influence which tended to heighten the tones of oil-painting, and to foster its abuse of grays, blues, lilacs, pinks, and chalky whites. This was tapestry.

* "Mons. La Tour has carried pastel to such a point, that one almost fears it may disgust people with oil-painting," writes an amateur in 1753. Another says: "Pastel is preferred for portraits." The Academy took the matter up, and closed its doors to the pastelists.

THE TECHNIQUE OF PAINTING

The Beauvais and Gobelins factories had begun to ask the fashionable masters for cartoons. Palettes became light to meet the requirements of this *genre*, as it was then practised. Boucher rejected all shade values. Light, tender, butterfly tints dominated; and yet his technique remained flexible and remarkable for its comprehension of the laws of colour, for its limpidity and solidity.*

The interest in handling and virtuosity increased as the century advanced. And as if in response to some general expectation, the supreme improvisatore made his appearance, the most brilliant sketcher ever known, the master of the sketch as a thing complete in itself, in which Nature is no more than a motive for variations in brush-play: Fragonard. Fragonard went further than any of his predecessors. He dared to improvise, and he prided himself upon it. We find him boasting on his canvases: "Frago painted this in an hour."

And Frago was the master who made water-colour fashionable. Just when the craft of good painting was about to expire, this process made its appearance, the lightest and most fluid imaginable, the purest sort of glazing, a tinted water of no consistency, which evaporates on the slightest pretext; "a breakfast of sunshine," as it has been called.† At this period an inquiring spirit, who

* This high-toned, fat painting further brought about the vogue of body colour, the creamy tones of which agreed with the tastes of the day.

† Taunay and Moreau the Younger practised it with success. The popularity of the process continued during the Empire. But at this period water-colour was pale and insipid, and this was approved; brilliant colour was not considered proper to the *genre*.

REVIVAL OF ENCAUSTIC

was also a distinguished amateur, the Comte de Caylus, undertook the study of encaustic painting as practised by the ancients, and embodied the results of his researches and experiments in a paper which he read to the Académie des Belles-Lettres on July 29, 1755. Mons. de Caylus described various processes which seemed all more or less imperfect. He suggested that the painting was executed with powders specially prepared and mixed with wax, or that colour was applied on a layer of wax which was afterwards heated, or on a coat of wax as thin as varnish.

Mons. de Caylus' study attracted attention. Some applauded and began researches on their own account. Others ridiculed the whole business. Imitators came forward, such as Bachelier, whose process was praised by Diderot.* An enamel-painter, Bouquet, wrote: "The new art of painting in cheese, invented for the laudable purpose of gradually discovering processes in painting inferior to those already in use." In Germany *eleodoric* painting was evolved (Calan, of Leipzig). Mons. de Montpetit invented *eludoric* painting (1782). Charles, Baron von Taubenheim, finally mixed oil with the wax.† This process, and that of the Abbé Requeno, explained in a work which appeared at Venice in 1784, were the only ones which left any practical results.

Researches of the same nature were pursued again after the Revolution by Castellan in 1815 and by Paillot de Montabert in 1829. Castellan

* *Histoire et secret de la Peinture en cire* (1755, published anonymously).

† Charles, Baron de Taubenheim, *La Cire allée avec l'huile, ou la peinture de cire trouvée à Mannheim*, 1770.

THE TECHNIQUE OF PAINTING

prescribed the use of colours ground with olive oil, laid upon a wax priming and dried by the help of a brazier. Montabert proposed to mix coloured wax with elemi and copal resins. A brush was used to apply cold colours to a wax panel ; they were then fused by the heat of a brazier, and the whole was covered with a layer of wax.

We shall see presently that all these experiments, and others of a less practical nature, were destined to bring about a modern result of a very interesting kind in the process of encaustic, and also an invention of more general advantage, capable of saving the oil-painting of the old masters and of preserving that of the moderns, an invention which evokes Eméric David's words in his *Histoire de la Peinture au Moyen Age* : "How can we say without deep regret that, if Michelangelo and Raphael had executed the Vatican paintings in encaustic, these masterpieces would have retained all their freshness?"

The decadence was drawing near, soon the era of absolute disorder was to set in. No tradition was to survive. Painting was to become a hotch-potch without system, without delicacy, without forethought, which was doomed to perish within a few years. Before this gaping tomb one master, Reynolds, recoiled, drew back, offered his homage and worship to the admirable artists of the past, and pronounced the funeral oration of traditional painting. He was strangely absorbed in processes. Gifted with the analytical and critical spirit of decadent periods, he studied methods with the utmost ardour, and even went so far as to destroy pictures in order to discover how they were painted.

METHODS OF REYNOLDS

But it would seem that the secrets he sought to penetrate were inviolable, or that their solution lay outside the scope of his inquiries, for his studies resulted in painting that evaporated, turned yellow, cracked, and perished even during his own lifetime. Surprised and greatly troubled at first, he ended by declaring philosophically: that the best painting is that which is liable to crack. This philosophy, too frequently adopted after him, served but to aggravate the evil to come. Reynolds further inaugurated a very artistic but over-prompt and impulsive manner, which led too often to fragility and evanescence, in spite of its artistic beauty.*

A contemporary† describes his methods in terms which throw a strong light on the changes and premature old age of his pictures:—

“On a light-coloured canvas he had already laid a ground of white, on which he meant to place the head, and which was still wet. He had nothing on his palette but flake white, lake, and black; and without making any previous sketch or outline, he began with much celerity to scumble these pigments together, till he had produced, in less than an hour, a likeness sufficiently intelligible, yet withal, as might be expected, cold and pallid to the last degree. At the second sitting he added, I believe, to the other colours, a little Naples yellow; but I do not remember that he used vermilion, neither then nor at the third trial; but it is to be noted that his Lordship (Lord Holderness, the sitter) had a countenance much heightened by scorbutic eruption. Lake alone might produce the carnation required. . . . His drapery was crimson velvet, copied from a coat he

* “He often blocked in his picture like the Venetians in a full impasto and even in *grisaille*. He then coloured it and carried it further with glazes; after that, he worked over it again in the impasto, and always finished with glazes.” So writes Mérimée, who got his information from a pupil of Reynolds’. He adds: “He painted with varnishes; he tried several, and unfortunately, has left no record of his essays.”

† Mason, in *Anecdotes of Sir Joshua Reynolds*, published by Cotton.

THE TECHNIQUE OF PAINTING

then wore, and apparently not only painted but glazed with lake, which has stood to this hour perfectly well, though the face, which, as well as the whole picture, was highly varnished before he sent it home, *very soon faded*, and soon after the forehead particularly cracked, almost to peeling off, which it would have done long since had not his pupil, Doughty, repaired it."

The Nineteenth Century.

One of the destructive agents which did most to aggravate the disorder of the times was bitumen. Admiration for the old masters tended to the popularity of yellow tones, which bitumen produces immediately, without the help of years. And then bitumen is an easy colour, which lends itself readily to all kinds of offices and all kinds of tones, and soon satisfies the painter who cannot get the rich quality of a dark tone. During the first half of the nineteenth century it became the greatest enemy of painting, and the greatest friend of the painter.

Its first friend and first victim was Prudhon.

Prudhon, a gentle, sensitive dreamer, blocked in *grisailles* which he coloured faintly with glazes. His poetic ideal inclined him to lay stress on modelling and values. Bitumen became his easiest medium of expression.* He revived the use of canvases with a red priming, at least in his later portraits. He made the most of this groundwork, and rubbed it over with a purplish tint, which sufficed for the shadows of the neck, the mouth, the

* Prudhon drew in *grisaille* and sometimes in a bluish tone ; then he glazed very lightly. Thus he prepared his picture with fresh, rosy tones, and warmed up his colour by degrees. He used to say to his pupils that the less solid tones should be put below, that they might be protected by the more solid ones.

PREDOMINANCE AND ELIMINATION OF LOCAL TONE



1. Local tone modelled by values. Importance of the shadows, restriction of the lights: *M^{me} JARRE*, by PRUD'HON. (*The Louvre.*)



2. Absence of local tone, no shadows. The modelling obtained by juxtaposed tones: *WOMAN READING*, by RENOIR. (*The Luxembourg.*)



PRUDHON'S TECHNIQUE

nostrils and the eyes. But he imperilled the solidity of his painting by the use of processes on which he seems to have counted for its preservation. He composed a kind of *pomade* on the following receipt: "A quartern of pearl mastic dissolved in spirits of wine; when it is melted it must be strained through a very fine cloth; after this it should be washed in several waters until the water no longer becomes cloudy as one kneads the mastic in it; after this it must be melted in oil, to which a quarter of a cake of virgin wax has been added. Into this must be worked sufficient oil to make a jelly, and the whole must be well ground to make it fit for use. When the operation has been carried out with spirits of wine, the mixture must be melted with oil in a *bain-marie*."

The sensitive Prudhon was an isolated pioneer, who had no following till fifty years later, when Henner and Carrière imitated him. Before his manner had come into favour a reaction set in against the eighteenth-century masters. Painters desired to go back to Nature, to the study of the model, but, as David said, by the way of "antiquity in the raw." Once more the coldness of sculpture invaded painting. Blocking in and under-painting were abandoned; a drawing was made, with a slight rubbing of Cassel earth, and on this the artist painted directly and in detail, pre-occupied with the passage on which he was working, and no longer keeping the effect of the whole well in mind, as the earlier masters had done.*

* See David's unfinished canvas in the Louvre, *The Oath of the Tennis Court*, where the heads of the personages are finished, and the bodies merely

THE TECHNIQUE OF PAINTING

David's best picture, *The Coronation of Napoleon*, has been very justly described as a *procès-verbal*. Each figure is carefully and individually treated, regardless of its surroundings. The whole work is petrified, and handling has entirely disappeared, as a result of the reaction against eighteenth-century methods. The painter has gone back to the smooth texture of the seventeenth-century masters, but has neglected the agreeable effect at which they aimed. "In this painting," says Delacroix, "there is no *skin* anywhere."

As chiaroscuro does not always respect drawing, it too was discarded. Even colour was attacked by this reformation. Delacroix has noted the consequences. "David and his school," he writes, "imagined that they could produce the tones Rubens got with frank and vivid colours such as bright green, ultramarine, etc., by means of black and white to make blue, black and yellow to make green, red ochre and black to make violet, and so on. They also used earths, such as umber, Cassel, and ochres, etc. . . . Each of these relative greens and blues plays its part in the attenuated scale, especially when the picture is placed in a vivid light which penetrates the molecules and gives them the utmost brilliance of which they are capable. But if the picture is hung in the shade or parallel to the rays of light, the earths become earths again, and the tones lose all play, so to speak. Above all, if the picture be

drawn upon the white canvas. The obsession of the painter by antique sculpture was such, that all the figures are naked. They were clothed only after the dignity of their modelling had been assured. The drawing was as careful and solid as the colour was negligent. Delacroix wrote in his *Journal*: "Instead of penetrating the spirit of antiquity and combining its study with that of Nature, David was, we see, the echo of a period when the antique was a fashion."

RESULTS OF DAVID'S TEACHING

placed near a richly coloured work such as a Titian or a Rubens, it appears what it really is: earthy, dull, and lifeless. 'Dust thou art, and unto dust shalt thou return.'"

Finally, the use of Cassel earth to rub upon the drawing before painting, and the habit of varnishing too soon (which began to obtain as a result of the Salon exhibitions) tended to produce those cracks which we see in the works of painters of this school, Girodet, Lethière, Gros, etc.

Such were the results of a revolution, narrow in spite of its apparent independence, the leader of which was guilty of a grave fault, that of despising everything connected with technique and processes. Did not David say one day to someone who was discussing these things: "I knew all that before I knew anything"? It is true that such knowledge should have been mastered by the novice, but it is all the more necessary, in that it constitutes the basis of an artistic career. It might be allowed that a painter, having once possessed it, may forget it afterwards, and carry it into practice unconsciously; but David's dictum, passing into a maxim, clung to painting, and kept it in a state of perpetual uneasiness. What is the good of studying so insignificant a branch of knowledge? said the artist. Each one, victim alike of his liberty and of his ignorance, desired to create his own technique, and the majority spent their lives seeking it, in a series of experiments and disasters, without arriving at any definite method.

Gros, an involuntary renovator, saved painting from David's glacial influence almost in spite of himself. To a pupil who showed him a poorly

THE TECHNIQUE OF PAINTING

furnished palette,* he made a remark which in itself proclaims the reaction: "One cannot paint in a Spartan style." To another he wrote: "Do not fall with your nose on the canvas in your anxiety to finish." He loved colour, and he thought of the general effect. He advised pupils to work for "cohesion of movement, of line, of light and shade, for general effect." He also recommended them to work up all parts together, so that there might always be homogeneity, no matter what the degree of advancement.

The masterpieces gathered into the Louvre by Napoleon's conquests, a feast of colour which fairly intoxicated Géricault and Delacroix, gave arms to this reaction, an ardent movement towards the picturesque, which delighted in colour and all its elements.

At this moment, when impasto was about to hold exaggerated sway, and when paint was about to be laid thick as a wall on the canvas, a little invention of a purely material, but very practical, kind greatly facilitated its use. For a long time past artists had ceased to grind their own colours; dealers manufactured them, and sold them in bladders; the

* David's palette was as follows: White lead, Naples yellow, yellow ochre, ochre of ru, Roman ochre, red brown, burnt Siena, crimson lake, Cassel earth, ivory black, peach or vine black, Prussian blue, ultramarine, mineral gray; cinnabar and vermilion beneath these. Towards the end of his career, he added light chrome and dark chrome, but only for draperies.

Géricault's palette: Vermilion, white, Naples yellow, yellow ochre, Verona brown, ochre of ru, raw Siena, red brown, burnt Siena, lake, Prussian blue, peach black, ivory black, Cassel earth, bitumen. Géricault painted on the bare canvas, without any preliminary preparation; he finished bit by bit, like David, without going over his work, and without glazes. He began the reaction against the thin painting of the Davidians by painting heavily.

Ingres' palette: White lead, silver white, Naples yellow, yellow ochre, ochre of ru, raw Verona brown, raw Siena, burnt Siena, vermilion, cinnabar, red brown, Van Dyck brown, cobalt, mineral gray, Prussian blue, ivory black, scarlet madder.

DECAMPS' HANDLING

colour, ill-protected against the air, dried quickly. About the year 1824 an Englishman proposed the use of tin tubes for the preservation of colours which, like lake and Prussian blue, deteriorate in bladders. The invention was rewarded by a silver medal and a premium of ten guineas given by the Society of Arts in London. Such was the origin of the tin tubes now universally used. And yet Mérimée, who speaks of the matter in 1830, in his book on oil-painting, says: "It is hardly probable that many English painters have adopted this expedient." It is the fate of inventions destined to wide popularity not to be appreciated at first.

Artists gave themselves up to liberty of handling with thoughtless enthusiasm. In some cases this amounted almost to frenzy. Decamps obtained an impasto which was a kind of crust. "It is rocky, masonic, crinkly, scratched, rubbed, fretted, floating in bitumenous glazes, full of accidents, and yet grandiose and passionate in spite of all this alchemy of the laboratory, the evils of which will become more and more pronounced with time." * Fromentin also speaks somewhere, in a general way, of the brush "dragging after it the viscous mortar which accumulates on the salient points of objects and gives us an illusion of relief, because the canvas itself has become more salient by its use."

There was one artist who paused to reflect and argue. This was Delacroix. He is the more interesting in that his researches presage the future. But if no one ever reasoned better, no one ever vacillated more in practice. Much as we may

* J. Breton, *Nos Peintres du Siècle*.

THE TECHNIQUE OF PAINTING

admire Delacroix as observer, thinker, and analyst, it will be prudent to make reservations in our appreciation of him as a craftsman, an executant, a master of technique. Delacroix possessed a fine eye, the servant of a very open intelligence, but, alas!—his pictures remain to prove it and we may admit it now—his hand was restless, hesitating, and capricious.

How many critics, confusing the theorist and the practitioner, have gone astray, and credited him with a conservative talent. Delacroix prepared the way for the new vision, and far from uniting the past and the present, he broke down tradition perhaps even more than David. His dangerous and intoxicating example has led many artists to that technique, or rather absence of technique, which leads to painting in a kind of frenzy, careless of the future—in other words, to disregard of the physical laws of colour, and the sacrifice of everything to brilliance, often ephemeral, and to expression, often exaggerated.

The modern painter with the most elementary knowledge of the properties of pigments exclaims with horror when he reads in Delacroix' *Journal* of the mixtures the master tried, and even recommended. Delacroix painted with the most complete technical ignorance. True, he had misgivings about the future of painting; he knew it to be fragile, but it never occurred to him to combat this fragility, to seek out its causes, to distinguish between durable colours and dangerous mixtures. He worked with absolute fatalism. Thus he prescribes rubbings, glazes, under-paintings, mixtures of virgin wax and oil of the most imprudent kind.

DELACROIX ON COLOUR

A certain picture was primed with umber and mummy. A woman was painted with Cassel earth and white in the shadows; elsewhere we see Prussian blue and white; light chrome in the high lights. Lakes that evaporate and vermilions which blacken, were all used by Delacroix; nothing could have been less in accordance with traditional practice. These audacities were also errors, and the humblest student at the Ecole des Beaux Arts would avoid them to-day like the plague.*

Delacroix is even less of a traditionalist when he undertakes to increase the splendour of a tint by division of its constituents; he then becomes the precursor of Impressionism, pure and simple.

Does he not reveal himself as the restorer of vivid colour, and even as the precursor of open-air painting, in contrast to the Davidians, who loved dead colours, and the Romanticists, who were fascinated by red tints? He wrote in his Journal:

"From my window I see a joiner working, naked to the waist, in a gallery. Comparing the colour of his body to

* Delacroix was not blind to his own weaknesses, and he acknowledged them with all sincerity in matters of construction and drawing. The aged painter Gigoux used to tell how his friend François, the landscape painter, at the time when he was working as a lithographer, was commissioned to engrave Delacroix' *Barque du Don Juan*. He went to the master to ask his advice. Delacroix stared at his picture with despair and stupefaction.

"Here," he said himself, "I have got a shoulder in profile and a breast confronting the spectator. Here is a man dying of hunger in the middle of the ocean, and I have made him fat and hearty. It is absurd."

"But," said François, "you might touch it up a little."

"Oh, no! there would be too much to do to it. . . . At that time I was in a fever when I was producing. I can't help it. Do the best you can. Audran used to correct Lebrun when he engraved him. Well, you must correct me. You are quite able to do so."

In his heart, he cared more for expression than correctness. He proved this one day by saying to someone who pointed out an error of construction: "I could, of course, correct it; but then I should risk losing the expression, which is very good."

THE TECHNIQUE OF PAINTING

that of the outside wall, I notice how strongly the half-tones of flesh are coloured as compared with inert matter. I noticed the same thing yesterday in the Place Saint Sulpice, where a loafer had climbed up on the statues of the fountain, in the sun. Dull orange in the carnations, the strongest violets for the cast shadows, and golden reflections in the shadows which were relieved against the ground. The orange and violet tints dominated alternately, or mingled. The golden tone had green in it. Flesh only shows its true colour in the open air, and above all in the sun. When a man puts his head out of the window he is quite different to what he was inside. Hence the folly of studio studies, which do their best to falsify this colour."

Elsewhere he writes again :—

"I see from my window the shadows of people passing in the sun on the sands of the port [he was at Dieppe] ; the sand here is violet in reality, but it is gilded by the sun ; the shadows of these persons are so violet that the ground about them becomes yellow. Would it be going too far to say that in the open air, and more especially in the effect I have under my eyes, the green reflections must be the result of the ground, which is golden, being illuminated both by the sun, which is yellow, and by the sky, which is blue, these two tones necessarily producing a green tone ? It is obvious that in the sun these two effects are more pronounced and even almost crude ; but when they disappear, the relations must be the same. If the ground is less golden, owing to the absence of the sun, the reflection will appear less green—in a word, less vivid."

No reasoning could be sounder,* but Delacroix, feverish and uneasy, was unable to materialise his thought when he took palette and brushes in hand, and set himself to paint ; his material betrayed him, because, lacking all confidence in it, he knew

* He said : "Give me mud, and I will make the skin of a Venus out of it, if you allow me to surround it as I please," a dictum which proves that he had instinctively divined the laws Chevreul discovered at this same period, when he proved scientifically that a colour changes in appearance according to its surroundings.

not how to treat it, and he spent his life in making experiments and trying the most contradictory receipts.

Nevertheless, he heralded and prepared the enlightenment which signalised the end of the century, the renewal of, or rather the actual progress in, vision and expression.*

Contemporary with Delacroix, there was in England an extraordinary artist, at once conventional and eccentric, for he was inspired by Claude Lorrain, and himself in turn became the inspirer of the Impressionists. This was Turner. Beginning as a water-colour painter, he perfected water-colours by the substitution of mineral for vegetable pigments. His practice in this medium gave him lightness, fluidity, and brilliance. He very often laid on his colour in crude tones which were harmonised by distance—an unconscious application of the principle of colour-division. Unfortunately, his technique became lawless, and he had a mania for chrome yellow in his oil pictures.† He lived the life of a recluse, and had no influence among his contemporaries. He died intoxicated with light, murmuring "The sun is God."

This cry was a prophecy which the end of the century was to see realised. But the era of bitumen, of dull, earthy colour and of heavy handling lasted in France until after 1870.

* Baudelaire, who often wrote after hearing Delacroix express his thoughts, says: "The best way to know if a picture is melodious is to look at it from a distance at which we can grasp neither the subject nor the lines. If it is melodious, it has a sense already, and has already taken its place in the repertory of remembrances" (*Curiosités esthétiques*).

† His friend Chantrey, the sculptor, once went to an exhibition with him on a very cold day, and stopping in front of one of Turner's pictures, he held out his hands to the loaded chrome as if to warm them, saying: "My dear Turner, this is the only comfortable place in the gallery."

THE TECHNIQUE OF PAINTING

An original artist, Courbet, rebelled against the prevailing academic coldness; under a revolutionary disguise, he led art back to the good tradition of broad, free painting. But he was a lover of sensation and eccentricity; he wielded a kind of trowel rather than a paint-brush, and aggravated the general tendency to heaviness of impasto by a new practice, the use of the palette knife.* Following his example, many painters laid on their paint as if they were plastering a wall.

Meanwhile a very curious return to the past took place in England. The movement known as Pre-Raphaelism expressed itself in the tight, precise handling and the vivid, vibrating tones of the German and Florentine Primitives.

This school, in spite of its revolutionary character, exercised a beneficent influence; it made indirectly for progress. Its champion, Ruskin, has written passages that agree with Delacroix' theories. He taught that all ordinary shadows should be of some colour, and never black, nor anything near black, but always luminous, and that shade is just as much colour as light.

The Pre-Raphaelites, sworn foes of the browns that reigned supreme in the French School, ignored *values*, and concerned themselves only with *colours*. They prescribed execution by successive details and passages, without much regard for the general effect; they sought for objective definition and complete finish of details, and for splendour of colour, neglecting harmony; they condemned individuality of touch,

* New in France. Constable had used it with great vigour and success a generation earlier.—[77.]

IMPRESSIONISM

the "virtuosity which is the outcome of the artist's vanity." * Execution was for them a factor to be concealed, and to obtain vivacity and ensure the durability of their colours, they adopted a very dry material, with but little admixture of oil. This return to the methods of the past, which went so far as to deny the interest of modern life, was necessarily short-lived, yet it had a basis of truth in its revolt against brown colour, and its desire for brilliance of tone. A new movement, which had its origin in France, sought to controvert the formulas of the studios. Its leaders who, although ignorant of the precepts of Delacroix' Journal, had begun to put them into practice, borrowed the eagerness for vivacity of tone shown by the Pre-Raphaelites. Their object was to paint the moment, to paint it exactly, to surprise it in the irradiation of light. This movement was Impressionism.

The Impressionist holds that the principal person in a picture is the light, and that the subject treated is the effect of this light at the moment of painting. The importance of the light seems to him so great that *local colour*—that is to say, the actual tint of an object—ceases to exist for him; what does exist is the coloration of the object at a given moment in a given light. The Impressionist discerns and notes the expressive detail of this chosen moment; he becomes the chronicler of an instant, the historian of the ephemeral, the prophet of the frail and evanescent. A rapid and subtle craftsman, he forswears the slow,

* Opinion of the painter, G. F. Watt .

THE TECHNIQUE OF PAINTING

wise methods of the past, and works long pondered and matured. He is an artist of vision, not of reflection.

Light! This is his chief aim. He obtains this light, not by the opposition of *darks*, as before, but by spreading it all over his canvas. As drawing comes after light, for him, and as the visual impression takes the place of literary imagination of the subject, or, in other words, composition, the whole system of painting is upset. To ensure freshness of tone, certain of the Impressionists adopt colour-division—that is to say, they do not mix their colours, but lay them on in thin lines of pure colour which blend at a certain distance, and produce optical fusion.* This method was not systematically practised by all the Impressionists; but, on the other hand, they all banished from their palettes the neutral, earthy tints, and retained only the brilliant colours. They then applied themselves to the study of all the apparently neutral tints in Nature. The Impressionists eschewed both black and white, and Monet painted a *Hoar-frost* (in the Luxembourg), which materialised an exquisite vision of colour in nominal whites.† Nor do they conceive of any shadow without colour. Monet painted the *Porch of Rouen Cathedral* in a medley of

* See, on p. 78, that the actual elementary colours when blended do not produce the theoretical binary colours exactly; they are duller. The Impressionists would put a blue and a red side by side, on the ground that the violet obtained by optical fusion would be more brilliant than that produced by mixing the two colours on the palette.

† I shall choose my examples mainly among works accessible to all—that is to say, the pictures in the Luxembourg. But as fine examples of the coloration of white, I may further instance the half-tones of a white table-cloth in a *Still-Life*, by Monet, belonging to Mons. Durand-Ruel, and the shirt-front of the man with the opera-glass in Renoir's *Baignoire*.

IMPRESSIONISM

brilliant smudges, a veritable feast for the eyes. Line, which the masters of tradition considered the essential framework of every picture, was sacrificed to atmosphere. Delacroix wrote in a passage that has become famous: "I open my window and look at the landscape. The idea of a line never suggests itself to me." Monet painted the Gare Saint Lazare, its rails and platforms, and yet, in this *geometrical* subject, as it might be called, line is quite subordinated; what strikes us is the colour, the smoke, the atmosphere.

Renoir painted the face of a *Reading Girl* with the light reflected on it from her book. The vividly red mouth is surrounded by yellow spots; higher up red appears abruptly, and then violet. The tones, which disregard local colour, are juxtaposed without unity, without any apparent transition. Yet from a distance we see a fresh face of living flesh. In landscape the tones mingle and contrast even more strongly. Pissaro's red roofs form an agglomeration of tones, in which the handling challenges attention at close quarters; but seen from a distance it vibrates with light and freshness.

People laughed and exclaimed at the sight of this painting, but palettes became more vivid. The outcry against the new style did not discount its influence. "They shoot us," said Degas, "but they rifle our pockets."

Moreover, the Impressionists made no pretence of having broken with the past. They hailed Delacroix and Turner as precursors, and claimed connection with tradition through Watteau and

THE TECHNIQUE OF PAINTING

Claude Lorrain. They might also have cited Chardin, as we have seen.*

About 1880, Monet's Impressionism—a thoughtful, but by no means a systematic or scientific method—was succeeded by Neo-Impressionism, which set itself to work out chromatic principles to their logical conclusion. Certain scientific works on optics had impressed some of the younger artists. After Chevreul and theories based on the analysis of the solar spectrum, came Humboldt with his studies of colour-perception. Then Charles Henry attempted to connect these questions with painting, and to reduce Monet's non-systematic practice to definite principles.

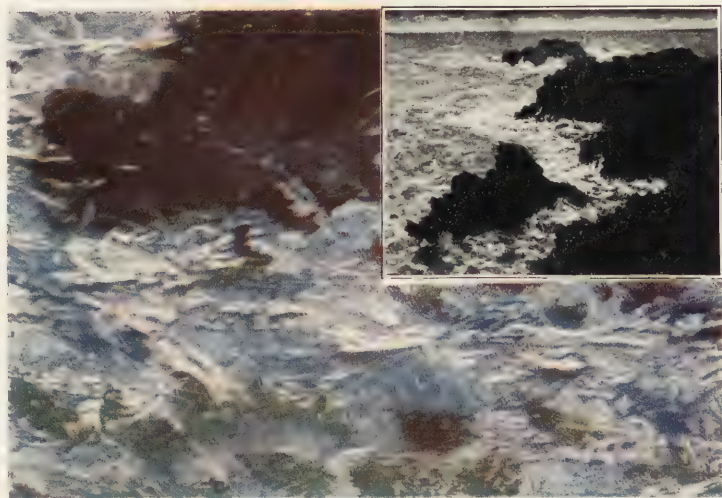
The theory of complementary colours attracted the attention of Georges Seurat and Paul Signac. Impressionism became scientific, and was christened *Pointillisme*. Monet's smudges, which had been applied in the direction of the plane, and had conformed to the character of the material represented, were transformed into minute, round, equal touches, regular and unloaded. Sketches were made, on which the relations of tones were noted; then they were systematised and connected by logically deduced gradations.

Just when these schools arose, an important modification came about in teaching.

Towards the close of the Second Empire, and during the first years of the Third Republic, Mons. Lecoq de Boisbaudran formed certain talented young artists, among them Cazin and Lhermitte.

* El Greco shows an interest in colour-division in certain of his works, and so also does Velazquez in his early works painted at Seville, and in his *Assumption of the Virgin*, at Madrid. L. Girardot noticed this and drew my attention to it.

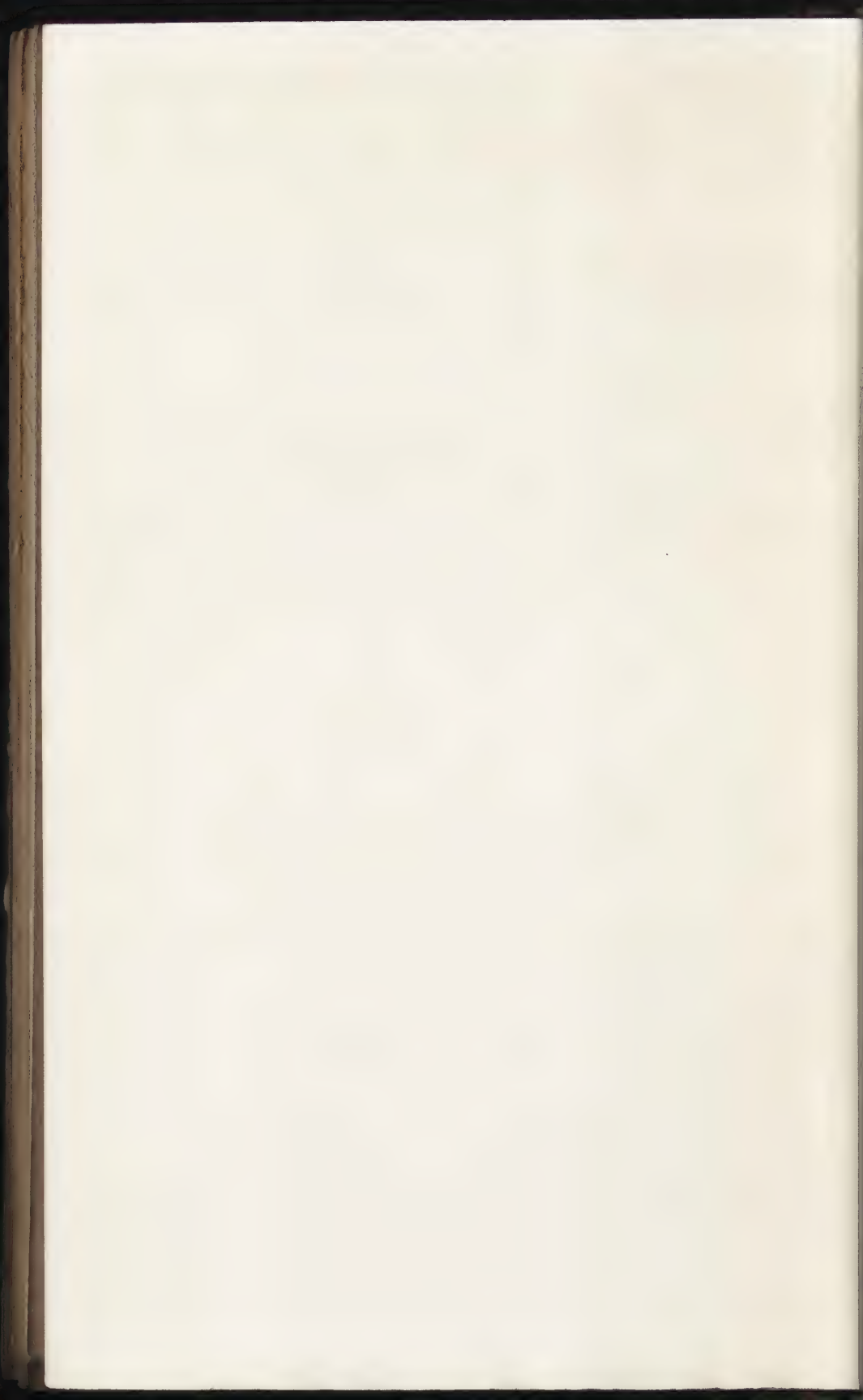
IMPRESSIONISM AND NEO-IMPRESSIONISM



1. Separate touches of pure colour, applied in conformity with the configuration of the surface, to get the modelling : ROCKS OF BELLE-ISLE, by MONET. (*The Luxembourg.*)



2. Regular touches, scientifically juxtaposed. Modelling and form sacrificed to light : VENICE, by SIGNAC. (*The Luxembourg.*)



EXERCISES IN COLOUR

His method is set forth in various treatises. One of these, *L'Education de la Mémoire pittoresque*, deserves attention.

Lecoq de Boisbaudran had composed a series of coloured models, arranged in a progressive order of difficulty. They showed flat tints on gray-toned paper. The pupils were given similar sheets of gray paper, on which they were required to reproduce the models. The flat tones were at first very simple, two in number, and contrasted, as two complementary tones contrast.

Some of the pupils copied them directly, yet found it very difficult to reproduce them from memory. Others, after examining them carefully, succeeded in learning them by heart, so to say. Mons. Lecoq de Boisbaudran stated that he had observed a great natural difference in the power of memorising forms and colours. Very few persons combine the two aptitudes. The exercise he set his pupils was designed to produce an equilibrium, and correct a tendency to see gray or yellow. It is the first exercise that should be given to the young painter.

Pigments, however, continued to be used without any care for their durability, or for the future of the picture; the greatest disorder persisted, the utmost indifference obtained, and the most fatal practices were prevalent.

Pigment was manipulated purely with a view to handling, and this handling artists sought to make as apparent as possible. Some desired it to be brilliant and facile; others, awkward and falsely ingenuous. Thus the manner of painting was more diversified than ever.

THE TECHNIQUE OF PAINTING

Baudelaire, a great writer who was also a very acute art critic, wrote these words referring to the Salon of 1846, words which are even more to the point now than when they were penned :—

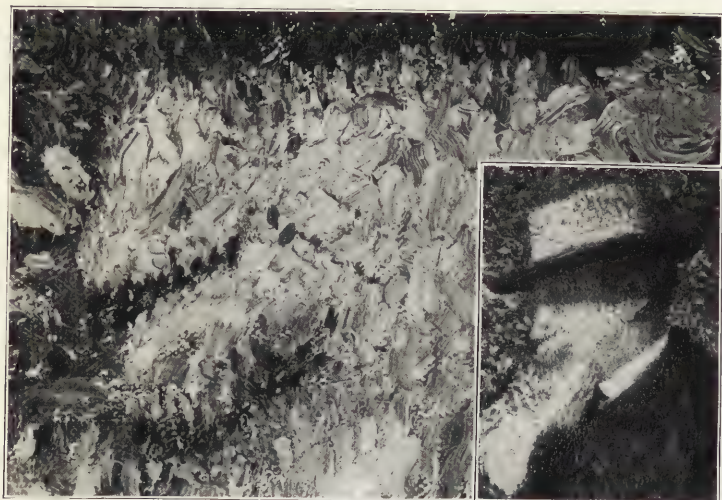
"There were still schools under Louis XV., and there was one under the Empire—a school, that is to say, a creed which implies the impossibility of doubt. There were pupils united by common principles, obeying the rule of a powerful chief. . . . Few men have the right to rule, for few have a great passion. And as everyone wants to rule nowadays, no one knows how to govern himself. . . . In the schools, which are merely the forces of organised invention, individuals really worthy of the name absorb the weak ; and this is just, for a large production is nothing but a thought with a thousand arms.

"This glorification of the individual has necessitated an infinite division of the territory of art. Individuality, that small property, has eaten up collective originality. . . . It is the painter who has killed painting."

Public exhibitions put a premium upon charlatanry. How is an artist to attract attention among the crowd of competitors? The submission which was formerly a condition of success is now considered a hindrance and a confession of impotence ; tradition is despised.* The artist must be independent, must prove it, and attract attention. Handling is a means to this end, and so is colour. They are turned to account. New executive processes are invented, new bases in colour. As they are imitated directly they are noticed, they are very soon depreciated. Then they are renewed. This gives rise to the

* Even by serious artists. As Fromentin said : "The individualism of modern methods is only the effort of each to imagine what he has never learnt ; in certain technical dexterities, we are conscious of the laborious expedients of spirits ill at ease ; and nearly always the so-called originality of modern processes hides an incurable dissatisfaction."

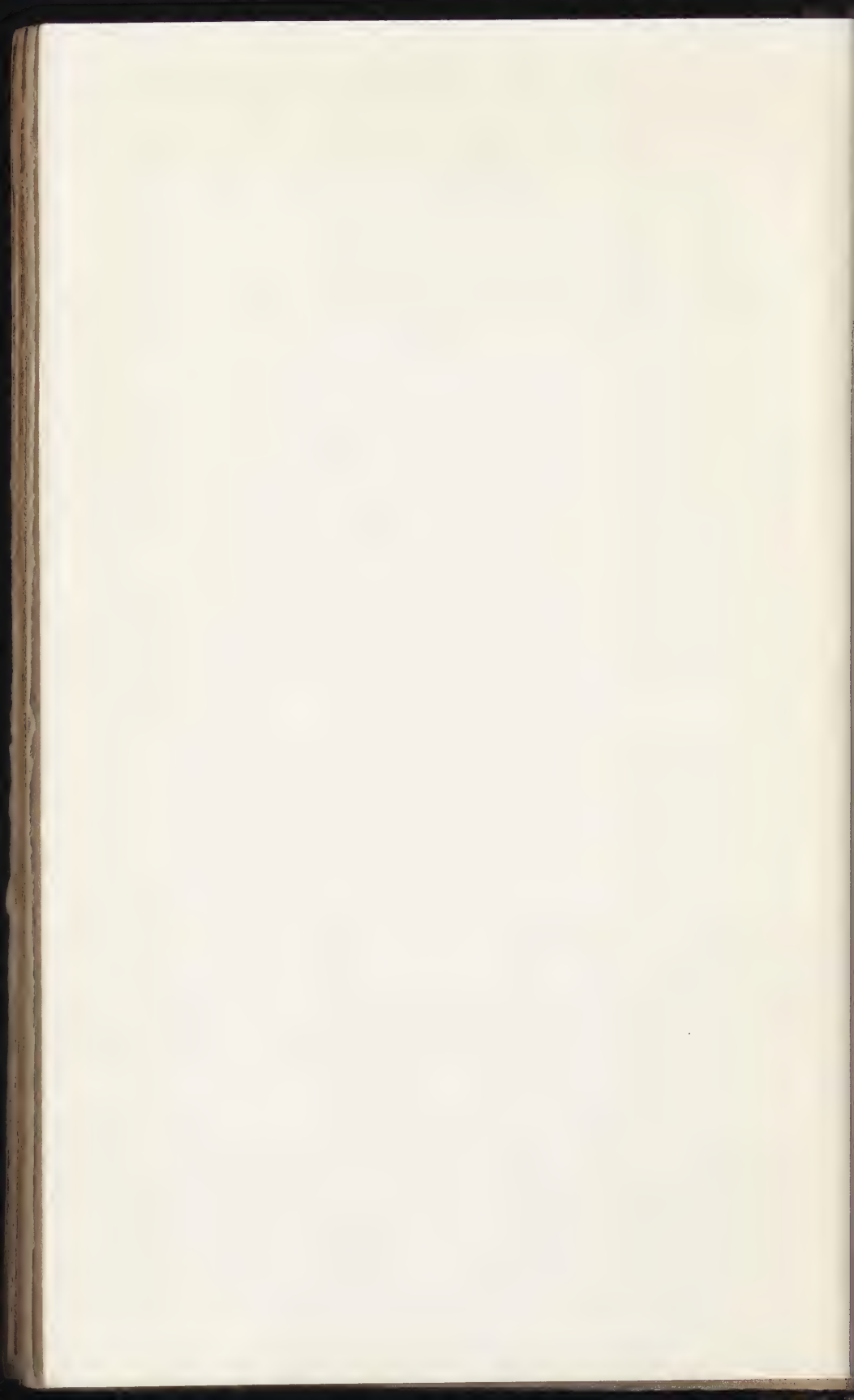
COLOUR-DIVISION



1. Touches of pure colour, applied in hatchings that follow the modeling of the forms : UNDER THE OLIVE-TREES, by HENRI MARTIN (*The Sorbonne*.)



2. Rounded touches, subdued tints : PORTRAIT, by E. LAURENT.
(*The Luxembourg*.)



VARIETY OF TECHNIQUE

innumerable popular formulas which, after a sudden vogue, are abandoned for forty years.

The neutral tone of bitumen, discredited and reputed dangerous, was replaced by a warm, russet tone, a sort of Van Dyck brown, which predominated for some time. This brown tone led, by way of reaction, to the very light pale tints due to Bastien-Lepage and his success. Impressionism then brought a bluish tone into favour; from this, the transition to violet was easy, and all shadows become violet. Yellow cadmium followed, no doubt by way of reaction. Now green is in the ascendant; on the palettes of the indolent it takes the place of tones difficult to grasp and to render truthfully.

Bitumen, red, white, blue, violet, cadmium, green—I had almost forgotten black, which gained for Cottet and his friends the title of the Black Band—there is scarcely a colour which has not been used as a key for a time; the whole of the palette has been tried in turn.*

Handling has followed fashions no less varied and contradictory. Artists painted on a kind of rough plaster with very thin liquid pigment, then with a fat impasto laid directly on the canvas; soon the colour-division of the Impressionists came into favour; finally, an impasto mixed with essential oils was adopted.

And now every kind of vision and of manner meet in harmony or contrast. We have at once vivid colour like that of Besnard, and *grisailles*

* Dinet has told me a story, which shows how entirely without conviction the adoption of these fashions sometimes is. Someone asked a certain painter: "Do you really see shadows violet, like that?" "Not yet," he replied. "But I am quite satisfied; I feel that I am beginning to see them so."

THE TECHNIQUE OF PAINTING

like Carrière's, russet tones like those of Ménard, and black ones like those of Cottet, the transparent rubbings of Lhermitte and the strong impasto of Bonnat, the divisionist technique of Monet, and the smooth, homogeneous material of Maxence.

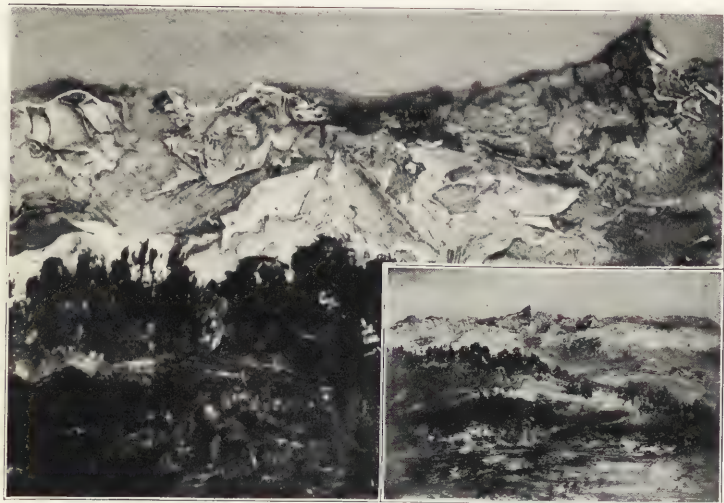
And, strange inconsequence ! in the face of this predominance of formula and handling, the spectator is warned unceasingly "not to look too closely."

But the fact is that painting has acquired a new and special interest, that of *handling*, which makes it as interesting to examine closely as to contemplate from a distance. The initiated are well aware of this. They enjoy a double pleasure : from a distance they think of Nature, recall and compare ; nearer, they think of the painter's craft, his difficulties, his technique. A decadent art if you will, but nevertheless, indisputably art, and an art which certainly appeals to us, to our *blasé*, dilettante tastes.

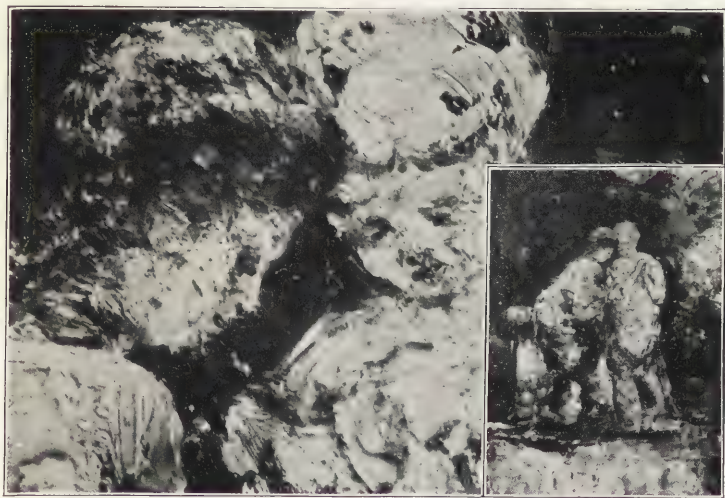
Our dilettantism has even led a certain number of artists to react against the mania for handling, and against the virtuosity of the brush. They try deliberately to be awkward and artless. This taste for false *naïveté* has resulted, during the last few years, in a kind of painting which sets handling of any kind at naught. A sort of applied unskilfulness triumphs with simulated candour. The artist is clumsy in his drawing, in his notation of tone, in everything.

After this it might be supposed that everything has been tried in painting, and that our epoch has raised the Tower of Babel of art. Our crowd of artists practise the formulas of every period and of every school ; they speak all languages, dead and

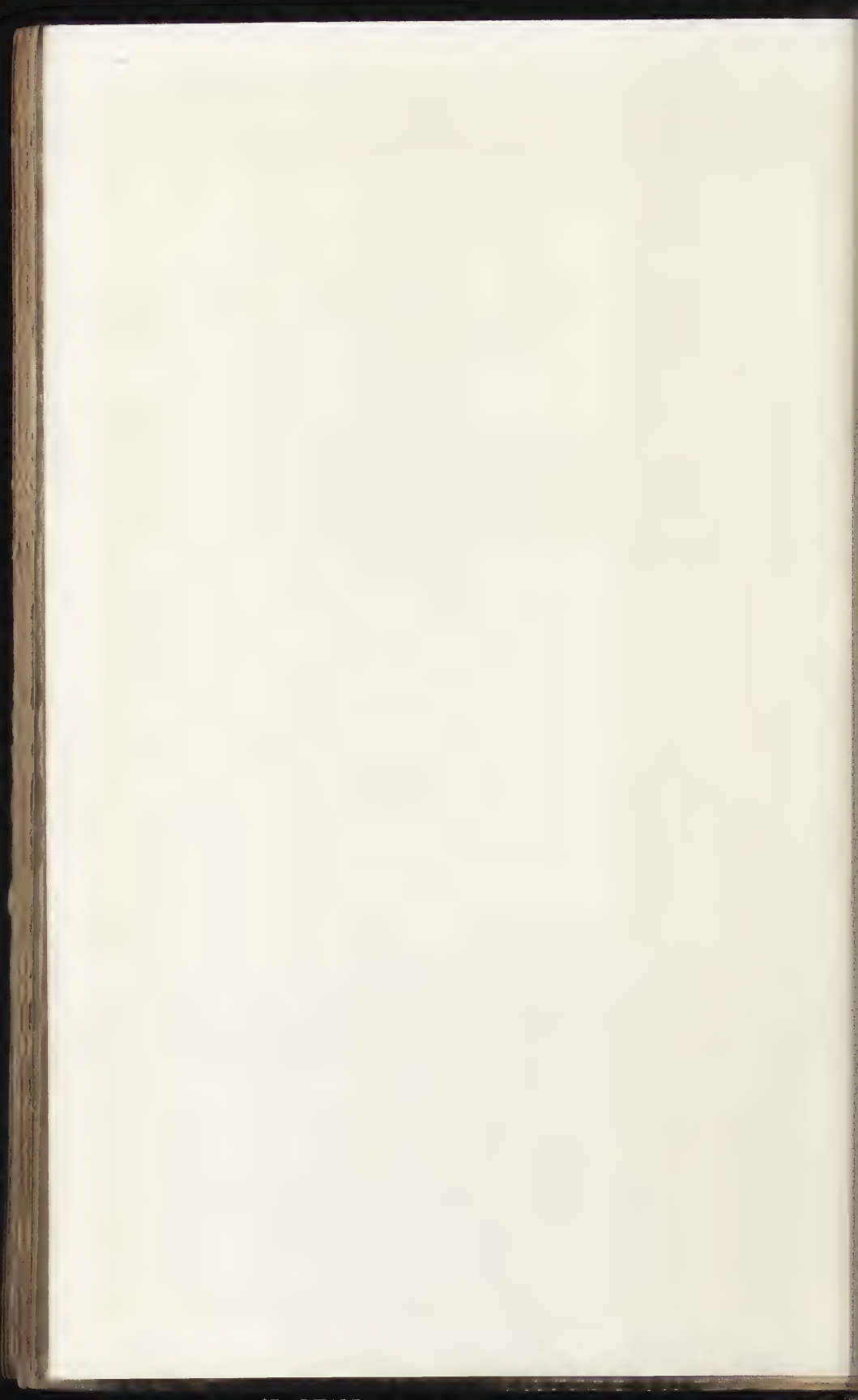
WORKED UP IMPASTO



1. Use of the palette-knife : THE PYRENEES, by DIAZ. (*The Louvre.*)



2. Various processes used and left very apparent by MONTICELLI.
(*Château Collection.*)



VARIETY OF MODERN PROCESSES

living; they indulge in cants and dialects; they perorate and they stammer; they experiment in Esperanto and in the babble of babes and sucklings.

Unfortunately, the object of all these technical obsessions is to dazzle, and not to build up solidly. This is the evil. Adopted imprudently, without any care for the health of the picture, but with a desire to awaken curiosity and to rivet attention, they end, as a rule, in disaster. The charlatanry of the juggler becomes a necessity in the crowd of the Salon; the neighbour must be eclipsed at all costs. For the last hundred years, exhibitions have been the life of painters, but they are death to painting.

Together with these essays in diversity of the method of expression, all processes have been tried with equal ardour and great variety of execution. Pastel has regained the favour it enjoyed in the eighteenth century, but it has not escaped the general taste for a rich impasto. Instead of the thin rubbings characteristic of its earlier practitioners, it shows hatchings and loadings; it imitates oil-painting, which it has ended by resembling, whereas in the eighteenth century it was pastel which modified painting.

Water-colour also is treated with great diversity of handling. Boldness and brio appear side by side with prudence and coldness. Body colour is freely used, and even tempera, and these are also introduced in pastels.

Finally, even encaustic has re-appeared. Messrs. Cros and Henry* have got together all the ancient

* H. Cros and Ch. Henry, *L'Encaustique et les Procédés antiques*, 1884.

THE TECHNIQUE OF PAINTING

documents, and, with the help of Mons. de Caylus' receipts for the admixture of wax and pigments, have constructed a method the results of which are very interesting.

Progress in artistic vision, decadence in method of execution—such, in brief, is the verdict that must be pronounced on the nineteenth century.* It has given us works of art worthy of the past, but their fragility is extreme. We see them fading and passing away from day to day. The old masters used pigments less solid than ours, and yet the majority of their pictures, now several centuries old, are—when the restorers have respected them—in a better state of preservation than ours after the lapse of a few years.

* "The truth which would make us all agree remains to be established ; its object would be to demonstrate that there is in painting a craft which can be learnt, and consequently, which can and should be taught, an elementary method which can and should be transmitted ; that this craft and this method are as necessary in painting, as the art of speaking and writing correctly are for those who use speech or pen ; that there is no disadvantage in these elements being common to all painters ; and that to claim distinction by our dress when we fail to achieve it by our person is a poor and unworthy fashion of proving that we are somebody. Formerly, the exact reverse was the rule, as is shown by the perfect unity of the various schools, in which a family likeness was to be noted in the greatest and most distinct individualities. Now this family likeness came from a simple education, uniform in every case, and, as we see, eminently salutary. What was this education, not a trace of which now remains to us ?

"This is what I should like to see taught. . . . It might almost be supposed that the art of painting is a lost secret, and that the last really accomplished masters who practised it have carried away the key of the mystery with them. . . ." (Fromentin, *Les Maîtres d'Autrefois*).

PERCEPTION

"I know what it will become" is a phrase on which only the consummate artist can venture.—*Diderot*.

Colour-Vision in Different Periods.

When primitive man desired to express and record his thoughts, he had recourse to signs which became at once writing, drawing, and sometimes painting. These signs, in the guise of hieroglyphs, showed images of reality destined to embody ideas. Both the Egyptians and the Greeks used one word to denote the action of writing and that of painting.

This common origin of art and letters recalls a phrase of the painter Couture in his *Entretiens d'Atelier*:—

"The artist was the first writer. . . . The greatest writers are those who describe or paint best; perhaps indeed they are but incomplete painters, who, had they reached one degree higher in human intelligence, would have used the divine language of painting to express their thoughts. . . . Homer tells us that Nausicæa was beautiful, but Phidias shows us that beauty." And Couture concludes by placing Phidias, Michelangelo and Raphael above Homer, Virgil and Shakespeare.

Couture goes too far. The sculptor and the painter have so far an easier task, in that they can

THE TECHNIQUE OF PAINTING

express only one moment of the action ; the writer has to lead up to it, to work it out, to show its origin, its development, and its results. His task is at once harder and more delicate. And when Couture declares that "the poet's creation is enhanced or diminished according to the imaginative intelligence of his auditor, that it is the vassal, the courtesan of the public, etc.," he forgets that the sculptor and the painter, who are debarred from the resources of preparation, and are only capable of rendering some particular instant of the action, are, in fact, even more dependent than the writer upon the lively imaginations of their admirers, and must look for the completion of their work to intelligences which will appreciate it only in proportion to their own superiority.*

Hieroglyphs which represented general ideas were easily understood, and called for little mental effort. These signs spoke of life and death, gods and kings ; they had a public character. A popular language, neither literary in its intentions nor plastic in its aims, this process, addressed to all and belonging to all, had nothing in common with a superior and luxurious product, an art destined for a chosen few.

And yet there was artistic effort in the essays of him who sought to represent a familiar form.

This was already draughtsmanship, and when colour was added, it became painting.

This primitive drawing and painting expressed the opinion its practitioners had formed of Nature, and therefore reflected contemporary vision.

* Sculpture makes very little appeal to the crowd. It is too haughty, too concise, not sufficiently loquacious ; it cannot tell a story like painting.

PERCEPTION OF RELIEF

Scholars have inquired into the nature of colour-vision in pre-historic periods and throughout the successive epochs of antiquity.

There seems to have been no similar inquiry into perception of form.* But if we consider the first efforts of every art and of every artist, we may conclude that objects appeared in flat outline without relief to a primitive artist, just as they do to any beginner.

All primitive sculpture is flat; all primitive painting is concerned with silhouette and not with relief. The sense of relief develops gradually. Modelling is always very incomplete at first. In sculpture it begins with square reliefs, almost entirely neglectful of modelling within the contours, though not unconscious of it. Primitive painting, which is always in high tones, and sees half-tones too light, is conscious of intermediate modellings, but indicates them very timidly.

Every art, as it develops, has to overcome the difficulties of modelling, just as all literature has to cope with those of transitions. This constitutes the awkward age of an art and a talent in process of formation.

In his volume of reminiscences, *L'Atelier d'Ingres*, Amaury-Duval records a lesson of Ingres':—

“ This is rather flat. . . . It lacks half-tones. . . . I once painted like this. . . . Now I round my things. . . . Come, take care. . . . No one

* The keenness and vivacity of vision in primitive races is indisputable. Certain pre-historic outline drawings of animals render movements which we can no longer discern, but which instantaneous photography has revealed to us. It would seem that our vision is less acute than that of primitive man, but more subtle and delicate.

THE TECHNIQUE OF PAINTING

will understand. . . . Yes, certainly, it wants more relief."*

What Ingres remarked was very true and very general. Every artist passes through a "flat" period; some never get beyond it. Many artists—the best, perhaps—see modelling and relief more correctly as they grow older. I have known old painters and sculptors who exaggerated it. I recall the quip addressed by a sculptor to one of his colleagues in this connection:—

"Take care, my dear fellow, you are giving us the round with a vengeance—a round and a half!"

We may conclude that the vision of schools, like that of individuals, undergoes an evolution from flatness to relief, without any transformation of human vision in general. Inattentive, and perhaps elementary in the indifferent, it is developed by exercise among those who work.

But has colour vision gone through the same processes?

It is obvious that the simple, primitive man whose eye is uneducated, sees the local monochrome tone, and does not distinguish the gradations of the modelling.

A Levantine who had had his portrait painted, complained that the red of his fez looked dirty on one side. It was in vain that the painter explained the meaning of light and shade, and pointed out that he had given the relief and the illumination of the fez. The imperturbable Levantine seized his

* We may compare various portraits by Ingres in the Louvre, the "flat" ones, *Mons.* and *Madame Rivière*, and the "rounded" ones, *Bertin* and *Chérubini*.

MAGNUS' THEORY OF COLOUR-SENSE

head-gear, twirled it round under the nose of his portrait-painter, and, as it turned, kept on repeating, "Red, red, red, red everywhere." The painter gave in, and laid upon the canvas a fine red tone, flat and unrelieved. The sitter applauded him, highly delighted; he had got the fez he wanted.*

The eye undoubtedly requires an education to enable it to distinguish and appreciate relief, modelling and tones. But is our vision, even when thus trained, complete in its appreciation of the scale of shades? Was it always, and will it be always in the same state of perception as at present?

A German scholar, Hugo Magnus, who has studied the question, is of opinion that there has been a gradual evolution of the colour-sense.† According to him, man has not always perceived the colours which we perceive, and will not always perceive only these.

His system is based upon Darwin's theory. He sees that all living organisms tend to develop in the course of centuries, and are transformed by the action of the forces of Nature. He asks whether it would not be possible to follow the phases of this progressive development by means of certain traces it has left in language during the historical period and even in classical antiquity.

He examines the Bible, the Homeric poems, the hymns of the *Rig-Vêda*, the *Zend-Avesta*, and he claims to show from these that the men contemporary with their writers did not see in Nature all the colours which we distinguish, or in any case,

* L. Arréat, *Psychologie du Peintre*, p. 80.

† Hugo Magnus, *Die geschichtliche Entwicklung des Farbensinnes*, 1877.

THE TECHNIQUE OF PAINTING

that they have made no mention of them, which would lead us to suppose that they were more susceptible to certain shades and less susceptible to others.

Magnus believes that in the beginning, human sight, more sensitive to quantity than to quality, perceived light with more intensity than delicacy. "The retina was then throughout in a state analogous to that of its peripheral zone at the present day; in these regions, the retina is as yet insensible to colour; every colour loses its true characteristics, and appears a gray more or less light."

Sensibility to colours, he thinks, was developed in accordance with the order of the solar spectrum. The more vivid colours, yellow and red, were perceived before the weaker blue and green. He points out that the *Vedas*, the *Zend-Avesta*, and the Bible never speak of the *blue* sky, and that the Homeric poets, who mention red and yellow, say nothing of the green of the trees or the blue of the sky. He lays stress on ancient descriptions of the rainbow. In the *Iliad*, the rainbow is described as red, or purple.

Finally, he shows language enriching itself by degrees as the faculty for discerning obscure shades develops. He quotes this phrase of Goethe's in passing:—

"If the Pythagoreans never mention blue, we must once more remind ourselves that blue has so much affinity with dark and obscure tints that they may long have been confused."

Magnus thinks that our descendants will perhaps some day distinguish "a particular colour at that

DINET ON MAGNUS' THEORY

very point where, for us, the chromatic character of the solar spectrum ceases altogether. It would seem that more especially with regard to violet, our sensibilities are still in process of elaboration. . . . Not infrequently, one hears someone describe a shade as violet, which appears blue to others."

He mentions experiments made on children of tender years, who will notice vivid, luminous colours, such as red, and are indifferent to colours of less intensity.

The theory interested me. I spoke of it to Dinet, who had had opportunities, very pertinent to this inquiry, of observing the nomads of the Sahara, men whose condition differs but little from that of the heroes of Homer and of the *Zend-Avesta*.

Dinet answered at once in a tone of absolute conviction. He thinks the German theory valueless and quite without authority.

"Your scholar," said he, "bases his theory on words found in Homer and in the Hindoo poets. But what is there to prove that these words had just the meaning he sees in them? Who, again, can say that there may not have been other words which Homer and the Hindoo poets never used? The most distinguished Arabic scholars fall into gross errors when they translate Arab words without the help of native Arabs, capable of explaining the exact shades of the language. They persist in giving to the words of this language, at once vague and rich, indefinite and full of colour, the most poetical and imaginative of all tongues, meanings as precise as those of our modern European languages with their civilised, subtle, and practical phraseology."

THE TECHNIQUE OF PAINTING

And Dinet went on to give me some very curious examples of the liberty and fancy of these Oriental languages, which, by their common origin, must naturally have great affinities with the Greek and Hindoo tongues.

An Arab, when he sees a piece of white linen, says very properly, "This linen is *green*." As green, the colour of the leaves, is to him the symbol of freshness, and of the moisture which produces verdure, "This linen is green" means "This linen has just been washed, it is still wet." A scholar of little experience would declare that an Arab cannot distinguish white from green.

Dinet gave me other instances—

"If you ask some European official, civil or military, what is the colour of the rocks in some region of Africa, you will generally be told, 'They are gray.' And yet the tints of the rocks in the Sahara are very pronounced. If you question an Arab, on the other hand, he will reply, 'They are blue, red, yellow, or green;' he will exaggerate, rather than minimise the colouring.

"The horse the Arab prizes most is the one he calls 'a blue horse, the colour of the pebbles in the river.' *We* should call it gray, but the Arab sees the chromatic quality in the gray tone. Does not this prove that the eye of the Arab nomad is more sensitive to colour than that of civilised man? Of course, I am not speaking of professional artists, whose calling trains them in the appreciation of colour."

As I was anxious to collect all the available evidence bearing on the problem, and then leave it to the reader to draw his own conclusions, I went

COLOUR-SENSE AMONG SAVAGES

to ask the opinion of Mons. Frédéric Christol, a painter who lived for some time as an evangelical missionary in South Africa.* He answered my inquiries by opening his recently published volume, *L'Art dans l'Afrique australe*,† and showing me this passage:—

“Their knowledge of colours is very elementary; they have no perception of blue, which they confound with gray; it is the same with violet, orange, and other intermediate tones which are undistinguishable to their Daltonian vision. Nevertheless, they recognise green, which does not exist for other natives, notably those of the Gaboon.”

I may add that Mons. Christol had never heard of Magnus' theories before. His statements were, therefore, the result of facts he had observed, and not of researches made to confirm a theory.

Mons. Cartailhac also tells us that there is neither blue nor green in the rock-paintings of Australian tribes.‡ Nevertheless, in treating of the evolution of colour-sense, there seems to be a general disposition to attribute to primitive peoples a certain impotence of language in the expression of perfectly definite sensations. Messrs. H. Cros and Ch. Henry say §:—

“It is very certain that in remotest antiquity, men did not apply the analytical powers of which we are capable to the evidences of their senses; this inferiority is apparent in the early stages of all races. Language necessarily reproduced the

* In 1884, Mons. Christol discovered and copied a rock-painting near Hermon, in Basutoland, a battle-scene representing giant negroes, little brown men, and cattle. His copy, which he presented to the Geographical Society, has become a standard document for primitive art.

† Published by Berger-Levrault, 1911.

‡ Cartailhac, *La Caverne d'Altamira*.

§ *L'Encaustique et les autres procédés de peinture chez les anciens*, 1884.

THE TECHNIQUE OF PAINTING

vagueness of sensation that obtained; but this was the result of intellectual, and not of physiological inferiority."*

Perhaps, some day, archæologists will be able to throw more light upon primitive man. But in any case, even if the evolution of vision were proved, painters should surely paint what we see to-day, without any attempt to anticipate the vision of the future.

Scientific Colour-Vision.

Leonardo da Vinci wrote the first treatise on painting which dealt with light and colour both scientifically and artistically. In the treatises that preceded his, such as the precise and practical essay of Cennino Cennini, there is no trace of any preoccupation with matters outside simple craftsmanship. The relation of colours to each other, the laws that appear to govern them, the luminous phenomena of Nature, and the processes by which these may be rendered in painting, were all considered for the first time by Leonardo da Vinci, very tentatively, it is true, but with a series of observations which the art and science of the nineteenth century have fully confirmed.

Theories in themselves have been of very little use to painters. The Venetians and the Flemings were empirical masters of colour whom Leonardo never equalled, in spite of his divination and his science. It is impossible to say that any fixed laws as to the relation of colours will ever save

* In conclusion, I may note the observation of a friend who considers Magnus' theory fantastic and paradoxical. "A Frenchman recently returned from Germany declares that he heard a colleague of Magnus' maintain that the French cannot distinguish *yellow* from *white*. He supported his contention by their use of the term *white wine* for an obviously yellow liquid. Such, said my friend, are the methods of German professors."

SCIENCE IN RELATION TO COLOUR

young artists from individual groping and experiment. Nor must it be believed, as has too often been said, that drawing must be acquired, but that colour is a natural gift; there have been painters who have become colourists by study.* If we examine the great schools of colourists, we shall recognise that all these painters cannot have been colourists by nature. But they became so under the influence of their masters and comrades. Their surroundings sustained and directed them, and inclined them towards colour just as, in a school of draughtsmen, interest in and knowledge of drawing become general.

Harmony is acquired rather by practice than by theory. In Leonardo da Vinci's treatise we find the principles of complementary colours set forth scientifically several centuries before Chevreul,† and these principles no more made the master a colourist than they now make colourists of those who attempt to evolve artistic formulas from the "law of complementary colours." Such rules may facilitate research and study; but in practice it would be misleading to ascribe to them the certainty of natural laws. Theoretical laws, they are nearly always disturbed and upset by eventualities more or less unforeseen.

It is, however, necessary, I think, to set forth the opinions of scientists, because they have had a great influence upon modern technique.

* Delacroix' first pictures revealed a painter's temperament, but fine colour only came gradually into his work, from the *Massacre of Chios* onwards.

† "Between equal colours, the most excellent will be that which one sees next to the colour which is a contrast to it, as red by the side of a pale tone, black with white, golden yellow with blue, green with red; every colour seems stronger beside its opposite than beside another akin to it" (Leonardo da Vinci, *Treatise on Painting*).

THE TECHNIQUE OF PAINTING

Science recognises three simple colours: yellow, red, and blue.

These parent colours, combined two by two, form three others, known as the binary colours: orange, produced by the mixture of yellow and red; violet, by that of blue and red; and green, by that of blue and yellow.

We thus get the following colours: violet, blue, green, yellow, orange, red.

By an ingenious device these colours have been arranged at equal distances round a circumference, and have been gradually shaded off to blend insensibly one into another.

But here we are brought up roughly against certain facts.

In the first place, we find in practice that the parent colours do not, with material colours, produce the theoretical binaries. We get dark, dull greens, oranges and violets, that clash with the parent colours. To make them harmonise, we should be obliged to dim these maternal colours, to transform them, and consequently to lose them partly.

As to the circular chromatic scale, we must first note that the two extremities of the prism contain colours which, though invisible to our eyes,* demonstrate their existence by their chemical or caloric action—caloric beyond red, where the thermometer can still be influenced, and chemical beyond violet, where chemical influence is still active.

But this is not all. At the extremities of the

* A shade described as lavender-gray has already been recognised beyond violet, and a crimson beyond red. This is noted in relation to Magnus' theory.

COMPLEMENTARY COLOURS

prism it is impossible to blend violet insensibly into red ; the fusion would not produce crimson.

This is vexatious, for the chromatic circle and its arrangement gave an opportunity for demonstrating the famous theory of complementary colours in a very striking manner.

Here it is, as expounded as early as 1812 by Ch. Bourgeois, in a paper read before the Académie des Sciences :—

“As white light contains the three elementary, generative colours, yellow, red, and blue, each of these colours serves as complement to the two others to form the equivalent of white light. The term complementary is accordingly applied to each of the three primary colours in relation to the binary colour produced by the other two.

“Thus blue is complementary to orange, because orange, which is composed of yellow and red, contains the elements necessary to combine with blue for the reconstitution of white light.

“For the same reason, yellow is complementary to violet, and red to green. And in like manner, each of the mixed colours, orange, green and violet, produced by the blending of two primary colours, is complementary to the primary colour not used in the mixture ; thus orange is the complementary colour of blue, because blue is excluded from the mixture which produces orange.”

In 1825 Chevreul began his researches into colour-contrasts, and described the enhancement of complementary colours one by another as “the law of the simultaneous contrast of colours.” Now this simultaneous enhancement of complementary colours in juxtaposition formulated by science is constantly violated by Nature.

Dinet made the following remarks to me in this connection :—

“Chevreul's complementary laws are hardly ever realised in

THE TECHNIQUE OF PAINTING

Nature. If they are true, and this we are not learned enough to discuss, it must be in another world, with ideal colours, for here light, distance, proportion and matter from which it is impossible to isolate them, even with all the precautions of the laboratory, always prevent them from being exact. When red trousers are objected to as being too conspicuous in warfare, officers will tell you that they look black at a distance against verdure. Black! Now verdure ought really to make them more brilliant, since green is complementary to red. On the other hand, no one would think of painting a battleship red, because it has been noticed that the blue of the sea enhanced the brilliance of the red funnels of transatlantic liners; and yet blue is not complementary to red."

For the sake of completeness, let us, however, note the three contrasts classified by Chevreul; we may indicate them, although they can only be considered as theoretical laws.

After laying down the "law of the simultaneous contrast of colours," Chevreul describes the following phenomenon under the name of "successive contrast."

If we look attentively at an object painted in black on a white ground, and then fix our eyes on a black ground, we shall see the black object re-appear here in white. Further, if the object so looked at were coloured, and we turned from it to look at a white screen, the original image would reappear here in its complementary colour; green, for instance, if the object had been red.

Under the heading of "mixed contrast," Chevreul points out, again, that if one looks attentively at a coloured object, and then turns to look at another of a different colour, the complementary of the first colour will appear upon the second and will modify it.

These facts have been very generally noticed. There are even historic examples of them. At the

OPTICAL PHENOMENA

moment of the Massacre of Saint Bartholomew a party of gamblers suddenly saw their dice stained with blood. Perhaps these gamblers had green branches before them, or they may have been dicing on a green cloth.

In *Goethe's Conversations*, Eckermann relates how once in 1829, when he was walking in the garden with the philosopher on a fine April day, and they were looking at some yellow crocuses in full flower, they suddenly perceived spots of violet when their eyes rested on the soil.

Delacroix once painted a yellow drapery without succeeding in giving it the emphasis he desired. He determined to go to the Louvre to see some similar draperies painted by Rubens, and he sent for a hackney cab. It was towards the year 1830, when Parisian cabs were painted canary yellow. In the street Delacroix saw the cab waiting for him in the sun, and noticed that the yellow of the cab produced violet in the shadow which was untouched by the sun. He paid the cabman, and went in again; he knew what he had wanted to find out.

These phenomena should not be unknown to artists; they may occasionally be useful to them. Painters should also be acquainted with optical mixtures, or "the law of resulting colours."

Two colours juxtaposed or superposed, will, according to the extent which each one occupies, cause a third colour to appear, the existence of which will be purely apparent. This colour, due to the optical mixture, is a resulting colour. Chevreul has told us that when a painter applies colour to a canvas he does not only tint all the surface touched by the

THE TECHNIQUE OF PAINTING

brush with this colour, but also tints all the surrounding space with its complementary.

To illustrate this, Delacroix' *Algerian Women* is cited, in which a pink chemisette patterned with little green florets produces an indefinable tone impossible to reproduce by mixing colours on the palette. It is the "result" of the optical fusion of the little green sprigs with the pink tone of the chemisette.

Although Delacroix was a contemporary of Chevreul's, he never knew him, nor had he any need to know him. As I have already remarked, the discoveries of scientists do good service in formulating these phenomena; but it must be admitted that the greatest artists dispensed with such knowledge, and that the painters of to-day too often exaggerate its importance.

In the history of processes, we have seen that certain painters who exploited these in too servile a manner fell into excesses which made their achievements curiosities rather than works of art.

Dinet made the following observations to me in this connection:—

"The unfortunate Chevreul has been made responsible for absurdities with which he has nothing to do. A painter, when he has got a red, imagines he is working scientifically in putting down a green beside it. He supposes this will give him—1, more brilliance; 2, more light; 3, more harmony. Now:

"1. Even according to Chevreul, if the two colours are in equal quantities, far from enhancing each other, they are mutually destructive; the brilliance of the one modifies the brilliance of the other, and the effect is *nil*.

"2. Light has nothing to do with the complementary colours; he who gives a red Venetian lantern an aureole of a certain green to make it more luminous, has never looked at a real

HARMONY IN COLOUR

one. If he had he would have noticed that this aureole is purplish red; he destroys the luminous effect by the use of the complementary colour.

"3. Neither has harmony anything to do with complementary colours. All colours, without exception, can be brought together in a harmonious manner. The harmony between any two tones arises from gradation, proportion, the introduction of other colours either in their mass or around them, a thousand indefinable causes which the instinct of the eye alone can combine. The Orientals are the most amazing masters of such combinations. They have had the good luck to have remained in happy ignorance of complementary colours. See how difficult it is for a European painter or decorator to harmonise our national colours, red, white and blue. Well, from Japan to Morocco, passing through Persia, you will find these three colours on every kind of china, and the effect is always charming. Painters and decorators! do not ask more from science than it can give you. Ask for solid and enduring tints and pigments, good varnishes, etc., but do not ask more. It will never make you see, if you do not see already, and if you *do* see, it will confuse your vision by its necessarily inexact theories." *

* The following communication has been made to me by a friend, in relation to the practical bearings of science:—

"I was travelling in the Sahara with a scholar who was a professor at the Ecole Polytechnique, and he was much annoyed to see how unscientifically the thermometers were fixed in the military stations. He himself, anxious to establish the truth as to the temperature of these regions, had brought with him a so-called sling-thermometer, the only truly scientific instrument of the kind, because it gives the temperature of the air exactly, independently of reflections from the ground or the walls, of the burning scirocco, and the cold north wind, of damp, etc. . . . Every day at noon, my friend twirled this sling-thermometer fastened to a string, for a quarter of an hour, and carefully noted the degrees which were registered in a truly scientific manner. The journey lasted a month. It was spring time, and the temperature was very variable. Some days, shivering in the icy north wind, we could scarcely believe we were in the Sahara; on others we were oppressed by a terrible heat which parched our throats and burnt our skin. What was our stupefaction when we went through all the temperatures so carefully taken at noon. Every day the temperature had risen regularly to 28° C. (94° F.). The sensations of our bodies had been due, not to the actual atmosphere, but to secondary causes. And I came to the conclusion that the more scientific a thermometer is, the less capable is it of giving any information as to the impressions of heat or cold one receives in passing through a country."

PROCESSES

Ever since artists have imitated reality by means of coloured powders fixed by agglutinants on surfaces such as walls, panels or canvases, they have had to contend with contradictory difficulties.

They have to produce opacity and transparence, light and dark, an appearance of dryness and an appearance of moisture. They therefore seek for processes capable of utilising the reflecting power of each molecule of dry colour, or of annulling it by means of an agglutinant.

Colour in powder retains its reflecting power only by remaining intact ; that is to say, free from any agglutinant. But in this state it cannot be fixed on the surface destined to receive it, and it gives no illusion of depth in the shadows. If, on the other hand, the agglutinant provides the powder with the necessary transparence in the shadows, and fixes it firmly on the surface, it diminishes its brilliance ; the colour, more difficult to handle, forms, with the agglutinant, a brittle stratum which becomes a medium of deterioration in the picture.

Painting struggles with these difficulties, and has not yet overcome them altogether.

Each of the processes employed has its advantages and disadvantages, according to the agglutinants used, their proportions, their action upon the coloured powders, and their effects on opacity and transparence, lights and darks.

They may be classified as—

1. Opaque painting : pastel, distemper, gouache or body-colour, wax-painting.

PASTEL

2. Transparent painting : water-colour, glazes, and varnish.

3. Mixed painting, combining the two qualities, according to the quantity of the agglutinant and the thickness of the stratum : fresco, tempera, or painting with egg, oil-painting.

OPAQUE PAINTING

Pastel.

This process—one of the most recently invented—is the most simple; the powder is almost pure. The very slight admixture of agglutinant, pipe-clay or gum dissolved in water, binds the powder into a crayon easy to handle.

Pastel is soft, medium, or hard, according to the quantity of agglutinant in the paste. But in proportion as the agglutinant is increased, the brilliance of the pastel diminishes. The most brilliant pastel will be the most tender.

A support capable of retaining the paste must be chosen for pastel. Any very smooth surface is bad ; but a very granulated surface should also be avoided : it tempts the artist to load the ground, and the pastel becomes more fragile in consequence.

As a fact, the execution most in favour in the eighteenth century, the truly classic formula, was the most rational. The pastel was rubbed thinly and not loaded.

Nowadays it is loaded, and made heavy by a system of hatching which, though not without charm, is imprudent and shows a lack of foresight. At a distance, the pastel has the plastery appearance of an oil-painting on a very absorbent canvas. It

THE TECHNIQUE OF PAINTING

is true that the material is thus left more intact than when the pastel is rubbed on. It offers particles of powder to the light without crushing them, and as each molecule reflects its neighbour, the pastel thus loaded presents all the freshness and brightness proper to it. But this freshness is won at the expense of durability. The artist is always confronted by the same old difficulties.

The best kind of ground for pastel seems to be a rather coarse brown paper. Canvases primed with size, with sawdust, with pumice-stone and with felt are also used.* All these preparations are equally good. The pastellist will prefer one or the other according to his individual handling. But it is very necessary to inquire into the nature of the agglutinant used in preparing the priming. Animal glue badly prepared becomes a destructive agent in pastel, by the introduction of germs of mildew. Pure gelatine is better, as also is caseine, if no glycerine or honey be added in order to make it supple. The presence of these ingredients will soon be betrayed by mildew.

Pastels require infinite care and precaution on account of their fragility.

The adhesive power of the powder is so slight that even a vibration will suffice to detach the molecules. It is therefore prudent to attenuate these vibrations as far as possible. As artists usually fit their paper or canvas on a stretcher, they get a veritable tambourine, sensitive to the slightest shock, and vibrating even to the noises of the adjoining streets.

* Jules Grün executes pastels on canvases primed with gesso, or on absorbent canvas.

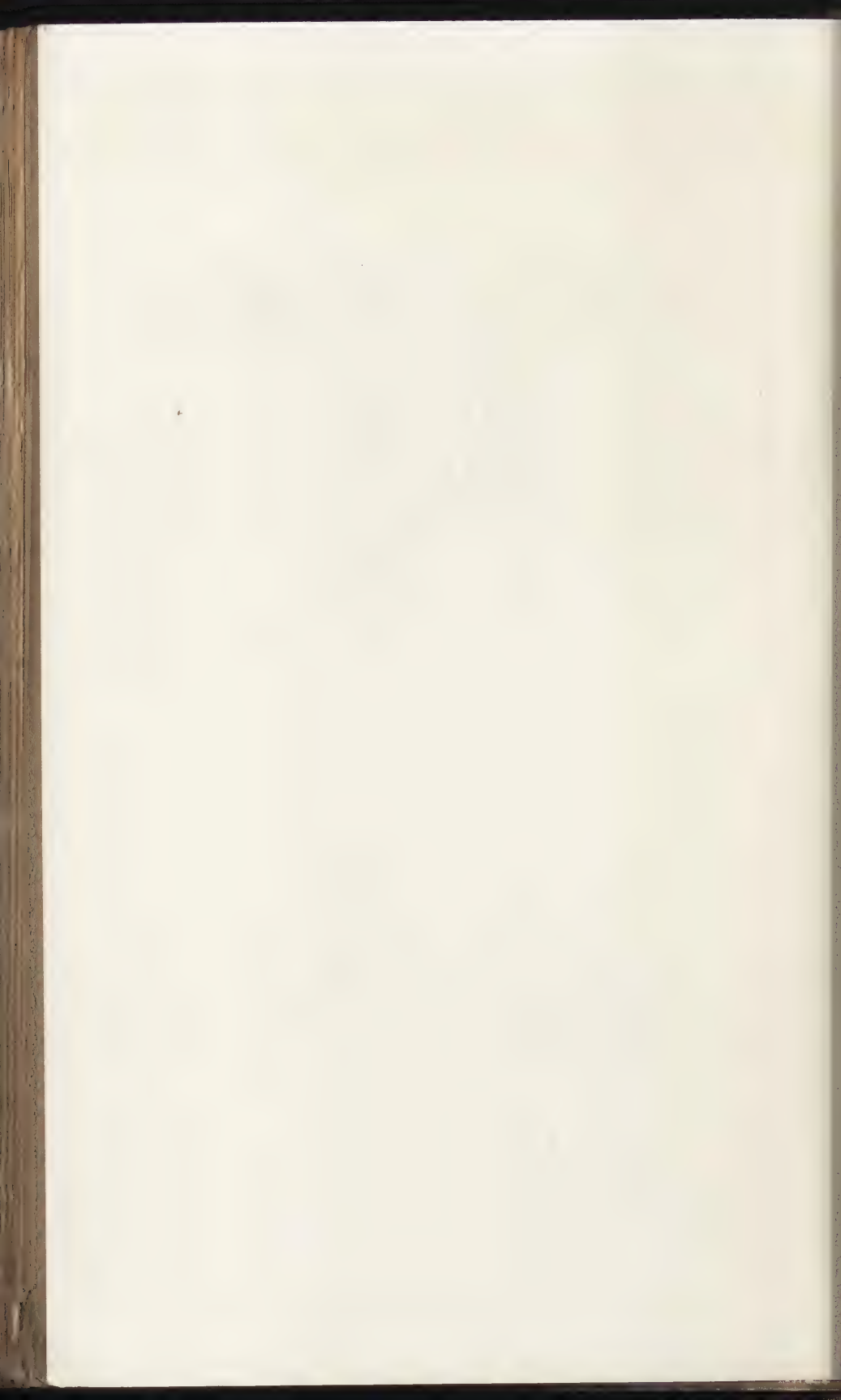
PASTEL



1. Tight handling: LA TOUR, by HIMSELF. (*St-Quentin, Museum.*)



2. Free handling: LA TOUR, by HIMSELF (*Dijon, Museum.*)



PROTECTION OF PASTELS

To protect pastels from blows from behind, it is customary to put a piece of cardboard at the back of the stretcher. But prior to this, two further precautions should be taken against vibrations. The first consists in inserting a small quantity of cotton-wool between the stretcher and the canvas. It is also well to fix on the stretcher, together with the first canvas, a second canvas with an oil priming turned *towards the stretcher*; this will react against noise and shocks, by vibrations contrary to those of the first canvas, which they will tend to neutralise. Finally, it will do the pastel the service of protecting it against damp, one of its worst enemies, of which I shall have more to say presently.

The following process is also simple and practical. Take a rather stout sheet of cardboard, and fix the pastel paper upon it by means of a little gum at its edges, or even with drawing-pins, which are better than gum. The pastel will not then form a tambourine, and it will be protected against shocks by the cardboard. The vibrations may be further diminished by slipping felt or cotton-wool against the joints of the frame.

The most varied methods obtain in the execution of pastel; all are of interest and all give a special result of some kind. Some artists only touch with the crayon, and leave the line intact; others rub the powder with the finger to spread it; some take up the powder with a stump and tint the paper with it.* Some prepare a kind of preliminary sketch, which they fix, so that they may have a solid basis to work on; they then rub on the upper

* Girardot recommends the pith of elder-stems cut into the form of a stump, as softer and yet firmer than an ordinary stump.

THE TECHNIQUE OF PAINTING

layer without fixing it, which enables them to keep the delicate bloom of the pastel. Others work without any under-painting, directly on the ground, and do not fix the pastel. Maxence prepares a very elaborate under-painting, in water-colour, on special paper. Before applying the pastel, he rubs it over with burnt bone powder. This gives the paper, which the water-colour had made smooth, a certain "tooth." Finally, he works with hard pastels.

Attempts have been made to fix pastel. But the same conflicting difficulties present themselves here again. To slip an agglutinant between the molecules of colour after the completion of the work destroys the qualities of the powder. The pastel becomes thick and heavy, and is, in fact, transformed into distemper. It even looks like a very loaded water-colour, if the fixative is used freely.

Latour, it is said, discovered a perfect fixative; it is supposed to have been a mixture of isinglass and spirits of wine sprayed upon the pastel. The question was much discussed in the eighteenth century, and gave rise to a variety of receipts, but even now there is no fixative which does not affect the colours, either in their brilliance or their stability.

As shellac is one of the ingredients of the fixative used for charcoal drawings, this, with a basis of alcohol, gives too much transparence to the chalk whites of pastel, and darkens the coloured tones.

The fixatives in general use, which have a basis of size or gelatine, all have the disadvantage of transforming the pastel into a kind of painting with

FIXING PASTELS

size, similar to that in use for stage scenery. Their use entails a further danger. As gelatine and size turn to a jelly when cold, they are kept liquid in the trade by the addition of acetic acid, or, in other words, vinegar. But vinegar acts injuriously upon pigments. The whites evaporate, the high tones darken, and the pastel loses its brilliance. Finally, if the solution is not very fresh, it ferments, and spots of mildew eat through the pastel to the paper.

It is therefore wise for the artist to prepare his own fixative. The proportions can then be regulated at will, but the pastellist must always bear in mind that the solidity of his work will be in inverse proportion to its freshness; he must therefore judge for himself how far he is prepared to sacrifice brilliance to durability.

After melting the gelatine over the fire in water, and placing it in a *bain-marie* to keep it lukewarm and prevent it from jellying while it is being used, the preparation should be tried on *one half* of a sheet of paper rubbed over with pastel, leaving the other half unfixed. The two halves should then be compared. When the right quantity has been found—the quantity which gives a satisfactory result as regards freshness and solidity—the preparation should be applied directly to the pastel for which it is required.

Girardot tells me that “pastel seems to fix itself automatically in course of time, under the influences of the moisture in the atmosphere, which act at once on the size in the paper and the gum in the pastel. The older a pastel is, the more solid it is.” He also recommends as a fixative the whey of white cheese spread on the back of a pastel on

THE TECHNIQUE OF PAINTING

paper, and on the surface, by spraying, upon pastels on canvas.

The fragility of pastel imposes cares on the scrupulous artist, which extend even to the framing.

The glazing of a pastel picture is as important as the varnishing of an oil picture. The pastel is therefore not actually finished until its author has ensured it a proper frame. It must be separated from the glass by means of little slips of wood placed along the sides or on the surface, upon the edges of the pastel. These slips are coloured a dull black. The glass is then bordered with black leather paper. These precautions minimise the risks of injury by damp and the resulting mildew.*

Distemper.

The coloured powder, which is almost pure in pastel, has the appearance of distemper as soon as the pastel is fixed. The next process after pastel

* Mons. Meyer-Sée, who devotes himself more especially to criticism of the English masters of the eighteenth century, and who organised the Exhibition of English Pastels at the Brunner Gallery in the spring of last year (1911), has communicated to me the curious information he has gleaned in the course of his researches relating to the English pastellists, and in particular, to Russell.

To protect his pastels from damp, Russell used to gum them to sheets of copper or to canvases coated on the back with gelatine. He prepared his crayons himself. Mons. Sée showed me a note-book containing Russell's receipts. The English pastelist substituted spirits of turpentine for the gum and water generally used to bind the powder. When he wanted the sticks to be fairly hard, he added a little spirits of wine. Russell's pastels owe to the resin contained in these unrectified essential oils a very interesting vivacity and transparency, which, however, deprive them of the characteristic flatness of tint. With the loyalty of a sincere critic, Mons. Sée also admits that cracks have appeared in certain works of Russell's, and that the material does not always seem to be very solidly fixed. These cracks are undoubtedly due to the resins in the essential oils, which might also cause the colours to become dull and yellow.

The pastellists Gardner and Chinnery prepared their under-painting with water or with body-colour. In Gardner's pastels the under-painting is blue; in Chinnery's, the white body-colour is tinted with light rubbings in the carnations. These works are not, strictly speaking, true pastels.

DISTEMPER

is therefore distemper, in which the powder is fixed to the surface by size.

The colour is first ground with water, and then mixed at the moment of painting with size, which is kept in a liquid state in a *bain-marie*. The size has to be mixed with the colour at the last moment, because the proportions have to be different according to the nature of the powder used. It is important for the novice in this process to paint in strong tones. The tones, when wet, have not the same values as when dry; they get lighter as they dry, and if the painter is not careful to be strong enough, the result is flat and pallid.

This process, which seems to have been one of the most ancient in the art of painting, and which was the most widely used until the advent of oil painting, is now only used by the scene-painter. If the proportion of size is correct, the colour will resist rubbing, but it is always soluble by water. Its flat tones give it a very agreeable delicacy.

As the handling of distemper is a good deal complicated by the changing values of the tones, which, as I have said, differ when first applied and when dry, dealers have brought out improved colours for distemper painting, which are almost the same in tone, wet or dry. This result is got by various ingredients: gum arabic, cherry gum, honey, fig juice, oil capable of mixing with water, caseine. The result in every case is an increase of the agglutinant, and consequently, a modification of the process at the expense of its freshness. The pastel-like quality disappears; the painting assumes the appearance of oil colour which has sunk into the canvas. It has retained a semblance

THE TECHNIQUE OF PAINTING

only of flatness, without its charm ; and as the next step is to cover it with a thick varnish to get back its brilliance, as well as to protect it from damp, the work is still further removed from flat painting, and approximates still more closely to oil-painting, without obtaining its resisting qualities. All these improvements, in short, produce only bastard results.

True distemper, with its difficulties, and on the other hand, its characteristic qualities, is infinitely preferable.

It is of great service on occasions when it is necessary to work quickly ; as in studies of landscape, for instance. It dries rapidly. Landscape-painters also have recourse to pastel, which allows of the same swiftness of notation. Moreover, the two processes are now often used together ; as the fixative gives pastel the appearance of distemper, passages of pure distemper are easily combined with passages of pastel, and a certain unity of aspect is preserved.

Vibert, in his volume on the *Science of Painting*,* speaks of distemper under-painting for oil pictures, and condemns the practice ; it is said to have been derived from a studio tradition, according to which Veronese blocked in his pictures in distemper. Vibert says that these under-paintings ought to be transparent and impenetrable, like water-colours, and not chalky and absorbent like distemper. He considers that the gelatine in the latter makes it liable to scale when used for primings and under-paintings.

In short, distemper is now very little used, in spite of its great historic past.

* Vibert, *La Science de la Peinture*, 1891.

GOUACHE AND WAX-PAINTING

Gouache or Body Colour.

The difference between distemper and gouache is very slight, the chief distinction being that in the latter gum arabic is used as the agglutinant, instead of size. The tone does not become so high as in distemper; its appearance when laid on wet differs less from that which it will have when dry. The tones, which are naturally very light, have a slightly chalky effect. Gouache, which is no longer a popular medium, had a great career in the eighteenth century. Its use, however, may be traced much further back than this, to the illuminators of mediæval missals, to the Persians and to the Egyptians; but various gums were probably mixed with it by the early artists.

Wax Painting.

This process was only used for mural painting, and it was in this medium that Flandrin painted his decorations in Saint-Germain-des-Prés. Some years ago the sudden popularity of flat painting revived the taste for the wax process.

The simplest method of painting with wax is to take oil colours and squeeze them on blotting-paper, which absorbs the oil. When the paint has dried into a stiff mass, wax, melted in rectified spirits of turpentine (one-quarter or one-third) or in elemi gluten, is added.* The best wax is obtained by melting sheets of virgin wax in a *bain-marie* with rectified spirits of turpentine.

When cold, this mixture should be a stiff jelly. It is kept in a closed vessel; if it gets too hard, it

* Elemi gluten is a mixture of wax, spirits of turpentine, and a soft, opaque resin called elemi.

THE TECHNIQUE OF PAINTING

must be warmed, and more spirit must be added to it to make up for the evaporation. The proportion of wax in each colour must be the same, otherwise the flatness will not be equal.

This method cannot claim to be pure wax-painting. For this, the colours must be ground with elemi gluten. Spirits of turpentine or rectified oil of spike may be added, if the mixture is too thick.

Although wax and spirit are used in this process, it is not what is called encaustic, the process of which is very different, and the result less flat in tone.

TRANSPARENT PAINTING

Water-Colour.

For water-colour painting, the coloured powder is ground in water with gum arabic in varying quantities; there must always be sufficient to ensure that the colour is of the same tone wet or dry.

The first duty and the essential quality of a water-colour picture is fluidity. Here the paper contributes to the effect, showing through the transparent colour, especially in the light tones. The paper is therefore not merely a surface, but a collaborator. Pure linen paper should be used. The best is sold by English firms; but unfortunately, it is sent to Paris by water, and the long sojourn in the hold of a ship makes it damp.*

Now, when paper has been exposed to damp after its manufacture, the size ferments, decom-

* Vibert, *La Science de la Peinture*.

WATER-COLOUR PAINTING

poses, and appears as mildew. Paper must therefore be carefully chosen, tested if necessary before purchase, and kept when bought in a dry place.

It is very important that the size should not have been applied to the surface of the paper, after its fabrication; when this has happened, it may disappear as the artist works, and expose the spongy pulp, which will come out in spots. The size should be mixed in with the pulp. On the other hand, the paper should not be too impervious, for, in that case, the brush will not "bite," and re-touches and over-paintings will not hold.

We will inquire later into the durability of colours. But first we will go into the question of the ingredients often added by manufacturers to facilitate execution.

For instance, attempts have been made to render the colours mellow by adding honey or glycerine, and even sugar. Unfortunately, water-colours painted with colours thus prepared stick together in portfolios; they invite damp and disaster, and even attract flies and their ravages.

To keep the colour moist longer and retard desiccation, the slime of snails and the juice of the fig tree have been used; a little glycerine, or a solution of gum tragacanth or chloride of calcium may be mixed with the water. But water-colours that dry slowly easily pick up moisture again, and they begin to dissolve when exposed to a damp atmosphere.

It is better to avoid these so-called improvements, and to grapple courageously with the difficulties, which are to be found in every process.

THE TECHNIQUE OF PAINTING

Glazes or Varnishes.

In studios, a confusion is often made between a glaze, a liquid impasto, and a very thin rubbing.

A glaze is a colour, either pure or mixed, but non-opaque and with no admixture of white, which is laid on transparently over a thick impasto, or at any rate over a ground already covered.

In our examination of processes we have seen that oil painting was, by reason of its transparence, only used at first as a glaze for works painted in tempera, with egg. "A glaze," wrote Mérimée, "is not perfectly executed unless it produces the effect of a coloured varnish on the picture it covers,"* and he insists upon the perfect grinding of colours as an indispensable condition of transparence. He adds: "Under these conditions, even opaque colours such as vermilion, oxides of iron, and Naples yellow can be used as glazes, and they then produce tints it would be impossible to obtain otherwise."

If a glaze be laid on as soon as the colour beneath is dry enough not to be disturbed by the brush, this glaze will become incorporated with the work beneath; it will have a durability which is often lacking in glazes, and will be able to resist the process of cleaning, which sometimes removes the glazes together with the varnish.

The under-painting which is to be glazed should be as firm as possible. This will help the painter to guard against the over-softness which sometimes results from the use of glazes. He must bear in

* Mérimée, *De la Peinture à l'huile*, 1830.

GLAZES

mind the deterioration to which pigments are liable ; glazes in general tend to turn yellow. Their effect must be calculated with this modification always in view ; the yellows should be minimised, and as little oil as possible should be put into the light parts, in which the yellowing of the oil will be most apparent.

Mérimée believes that Titian's pictures have assumed a bistre tone due to the yellowing of his glazes, and that Rubens' pictures, on the other hand, which show no such signs of deterioration, were probably painted with glazes specially prepared with a view to the alteration of colours. Perhaps he goes rather too far when he reconstructs Rubens' recipe. "It is possible," he says, "that he composed the tones for his shadows with a mixture of ultramarine, lake, and Italian pink. The loss of colour in the Italian pink will have counterbalanced the yellowing of the oil."

When the glaze is to be applied to a very dry surface, this should be carefully cleaned, and Vibert advises that it should be rubbed over with varnish. This will give greater stability ; the transparent glaze will adhere better to the under-painting.

The painter must not, be it understood, work exclusively with glazes. They must be looked upon as a special resource possible in oil-painting, and not as a process sufficient in itself. In oil-painting it will be found that glazes, which give an appearance of depth and mellowness, should not be used to represent opaque, non-luminous objects in full light ; they are useful to vary execution. Without glazes, which bring out its peculiar charm, oil-painting loses one of its most precious qualities.

THE TECHNIQUE OF PAINTING

At present glazes are very little used, and indeed, ever since the time of David, they have been generally despised in the studios. Many painters do not even know how to execute them; and as they are often confused with scumblings and rubbings, they are condemned as the device of poor, timid, and inexperienced painters.

Now, on the contrary, they require the utmost dexterity; they were freely used by the greatest and most skilful of painters, Titian, Rubens, and Rembrandt, and added greatly to the richness and charm of their pictures.

To prove this, it will only be necessary to try to copy some of these pictures without using glazes; a general heaviness will be the result, a lack of all the luminous depth and delicacy of the original.

The only drawback to glazes, a drawback which has sufficed to discredit them, is their fragility. But some painters assure us that this is obviated by the use of petroleum mixed with a siccativ. The following is Girardot's recipe, which he says he has used with perfect success. In a bottle containing 125 grammes of Courtray, he puts a spoonful of rectified petroleum. He considers this mixture perfectly satisfactory. His picture in the Luxembourg (*Le Cimetière de Tétouan*) was glazed with it in the mountain background. But the painter must be careful to use rectified petroleum. Dinet prefers oil varnishes, which he considers more durable.

I may conclude with a remark made to me by Carolus Duran: "Glazing should be a resource, not a method."

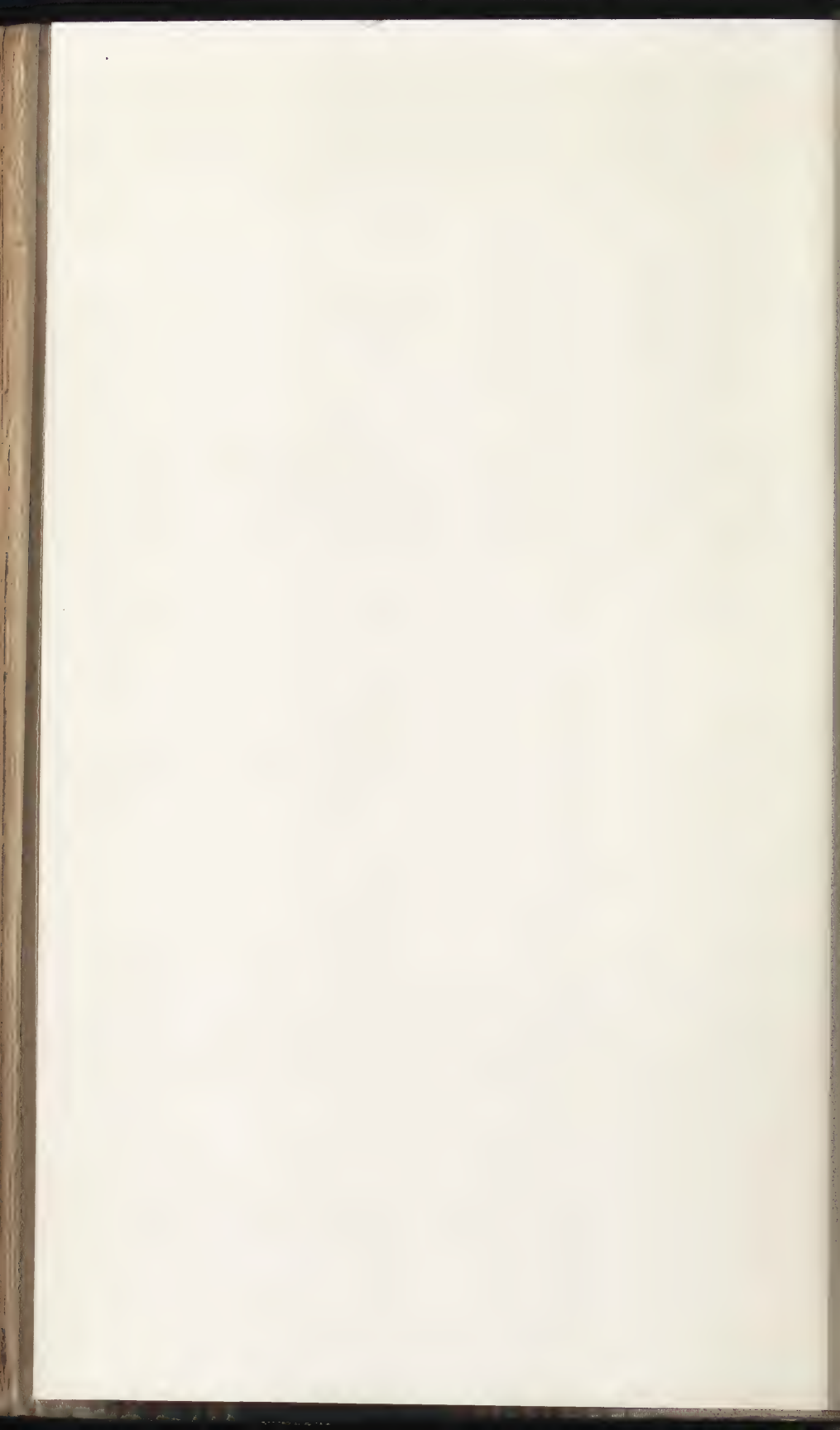
PERIOD OF THE ITALIAN RENAISSANCE, 15th CENTURY



1. Fragment of a Fresco.



2. The complete group : GIOVANNA TORNABUONI, by BOTTICELLI.
(The Louvre.)



MIXED PAINTING

Fresco.

The Italian word *fresco* (fresh) signifies a method of painting in water-colour on fresh plaster, a kind of distemper painting without an agglutinant. The plaster absorbs the colour, and the painting accordingly lasts as long as the cement of the wall itself.

As fresh plaster, which is composed of a mixture of slack lime and fine sand, hardens as it dries, and becomes as firm as stone, this kind of painting should be durable above all others, provided that the workmanship and position of the wall are favourable—that is to say, inaccessible to salt-petre—and that the colours used are not such as to deteriorate from contact with lime. But the durability of fresco, which is secure in a dry country, cannot be counted upon in our damp climate.

In spite of its simplicity of appearance and method, this process is not a very easy one. In practice it calls for great confidence and great facility. The plaster, which dries very quickly, has to be laid on at the time of painting, and covered before it gets dry; and as it is no longer absorbent after it dries, it does not allow of re-touching. It is therefore necessary to paint quickly, and as far as possible, definitively. If any re-touches are necessary, these must be put on in distemper when the surface is dry. But as the lime can no longer absorb them, they are very perishable and too often disappear.

These, the broad principles of fresco painting,

THE TECHNIQUE OF PAINTING

are further complicated by a number of details, very important for the preservation of the colours.

As the durability of the fresco depends above all on the wall and its cement, both must engage the attention of the painter. No material containing saltpetre must be used in the construction of the wall, and if the surface be smooth it must be roughened and made granular, so that the mortar may adhere firmly.

This mortar consists of two strata. The first covers the entire surface to be decorated, and is left rough, that the second coat may hold well. When the first coat is dry the artist draws his design on it. Prior to this he will have executed a cartoon, from which he now makes a tracing, pricking out the design. This tracing he transfers to the surface of fresh plaster by pouncing, *i.e.*, by driving coloured powder through the pricked holes. When this is done, the outline is gone over with the brush, which will enable the painter to re-adjust the details of his picture and to place it, piece by piece, on the new coat of plaster.

The plaster of the second stratum must not be thick, and is prepared in such a manner that it can be applied fragmentarily; that is to say, only so much is laid on as the artist can cover in a single day, for only so long will the plaster be fresh enough to paint on.

The general tracing is now used in pieces, which fit together and serve in succession to trace upon the fresh plaster on which the artist is about to paint; he adjusts each piece, on the one hand, to the complete drawing made upon the first layer;

FRESCO

on the other, to the portion already completed on the second.

In old frescoes it is possible to recognise the traces of the drawing where they have been gone over and strengthened in the mortar with a stylus. By this means the drawing was easily found again in the course of the work ; there was no danger of losing it, as in other processes, by covering it with colour. The joins of each fragment are still apparent, enabling one to see what the artist succeeded in painting each day. Thus in the *School of Athens*, for instance, we learn that, generally speaking, each figure was painted in one day. The pieces which make up the architecture are much larger, and their very dimensions reveal a prodigious dexterity.

As fresco only admits of colours that resist the action of lime, the very restricted palette is deprived of such brilliant colours as orpiment, lake, cinnabar, and emerald green. As a fact, the fresco painter does not use a palette at all ; he could not prepare colours in sufficient abundance upon it. He has little pots, in which every tint and every gradation of tint, shadow, half-tone, and light are prepared, enabling him to cover quickly and sufficiently.

In conclusion, it must be said that in spite of the theory, correct enough in principle, that fresco is exclusively a water-colour process without agglutinant of any kind, it is necessary to have recourse to some kind of size to fix certain powders, which, like azure, ultramarine, and carbon black, do not blend with water. Cennini recommends the use of white of egg. In practice the white or the yolk

THE TECHNIQUE OF PAINTING

is used indifferently, and sometimes the two, mixed together. Cennini makes distinctions, sometimes of a very naïve kind, between the choice of eggs with dark and light yolks. The important point is that the lime absorbs this gluten and retains it. Mons. Beaudoin has lately executed a fresco at the Petit Palais, which, he tells me, he painted entirely after the instructions given by Cennini in his *Treatise*. He considers the old Florentine master the best possible guide for the fresco painter.

Painting with Egg, or Tempera.

This process, like distemper, one of the most ancient of all, is merely a kind of distemper in which size is replaced by raw egg.

But it is capable of a number of combinations. Both white and yolk of the egg may be used, or only the yolk, and to these may be added resin or wax, which give transparence, or such ingredients as vinegar, which prevent the decay of the egg.

Painting with egg will produce results differing greatly in appearance, according to its degree of opacity. It can either be opaque, or as transparent as water-colour. Some paintings with egg are hardly to be distinguished from fresco; others may be mistaken for oil pictures. How many people know that Ghirlandajo's portrait of an *Old Man with a Child* in the Louvre is painted, not with oil, but with egg?

Vibert has found by analysing eggs that they contain substances suitable for painting, such as caseine, oil of egg, and albumen. With these primary

PAINTING EXECUTED WITH EGG



AN OLD MAN WITH A CHILD, by GHIRLANDAJO. (*The Louvre.*)



EGG-VEHICLES

elements, mixed with resins dissolved in oil of egg and wax with ammonia, a process of egg-painting can be carried out, which Vibert considers purer and more durable than the old method, because it rejects the useless ingredients of the egg, such as sulphur, which would affect white lead injuriously.*

Painting with egg accordingly no longer requires the complicated manipulations practised by the Primitives and referred to in Cennini's volume.

For egg-colours, as now prepared by artists' colourmen, a white palette of china, glass, metal, enamel or celluloid is used, as for water-colour. Paper, cardboard, wood or canvas may be used to paint upon. It is unnecessary to prime these surfaces, the under-painting will be a sufficient substitute for this. But if the surface is too rough, recourse may be had to a priming which will facilitate execution : an egg-priming, absorbent and insoluble in water, obtained by two layers of egg paint soaked in water.

The paint dries at once if it is moistened with water ; if the painter wants to work on it in a moist state he has only to dip his brush occasionally in a little *aqualenta*. Lightly applied, this *aqualenta* permits of re-touches and fusions by suspending momentarily the absorption of the colour, like a varnish used for re-touching. But if the painting has to be varnished, a water-varnish is used, which brings up the tone, sustains it, and harmonises it with what the painter is working on at the moment. When any re-painting is done on this water-varnish, the portion so treated sinks in. But

* Vibert, *La Science de la Peinture*, 1891.

THE TECHNIQUE OF PAINTING

if it is rubbed over again with water-varnish it regains its transparence. When finished the picture should be varnished with water-varnish, and when this is quite dry, with ordinary picture varnish.

This venerable process, which is now much neglected, produced works of great durability; perhaps some day it may recover the popularity it once enjoyed.

Oil-Painting.

Ever since the Renaissance the process most in favour has been oil-painting. Commanding resources which other methods lack, it gives the opacity of high lights, and the transparence of shadows, a flat and a rich liquid effect with equal success. It allows of re-touching and consequently of a more precise and elaborate execution than any other medium. In execution it may be suave, rich, or vigorous as occasion requires. Unfortunately these qualities are counterbalanced by certain defects, the most serious of which are the transformations effected by time. Oil colours deteriorate in various ways as a result of causes we shall presently discuss.

First we will briefly describe the process.

In France pigments are ground with an oil called *œillette*, which is an oil expressed from poppies, and called *œillette* by a corruption of *oliette* (*olivette*), a name given to the poppy in certain districts. This poppy oil is whiter and less viscous than linseed oil, but less siccative; linseed oil is therefore used in grinding certain dark colours.

The Italians prefer nut oil. As this is naturally

OIL-PAINTING

yellowed, it does not become much more so after use; it is more supple, and produces an impasto less liable to crack.

Artists' colourmen are often reproached for putting too much oil in their paints. They reply that the generality of artists prefer their paints thin, the true reason probably being that dealers are able to keep such colours longer.* Some artists, on the contrary, spread their colours for a few minutes on blotting-paper, knowing that oil, in spite of the service it renders, is a destructive agent.

The effects of its presence proclaim themselves at once in many cases by the sinking in of the paint. I will speak presently of the deterioration of colour. The sinking is not, properly speaking, a deterioration; it is due to the displacement of the oil in the impasto. The painter is not much disturbed by it, but it is an annoyance to him when he wishes to fuse a new passage with one already completed and when he wants to judge of the general effect.

If a layer of colour be laid upon a porous material or another layer of colour not perfectly dry, it sinks in; that is to say, the oil, instead of remaining equally distributed round the particles of coloured powder, travels between the particles, and soaks into the porous matter or the older layer of colour, which is itself porous if not perfectly dry; the powder, thus deserted by its agglutinant, assumes a dull, indeterminate appearance, especially in the shadows, to which the oil had given depth and transparence. All that is required is to restore the oil the colour has lost, or to give it a coat of varnish, the resin of which will fill up the pores of the colour

* Vibert, *La Science de la Peinture*.

THE TECHNIQUE OF PAINTING

abandoned by the oil; the paint will then recover its transparence and its liquid appearance.

If the artist paints upon a stratum the pores of which, though empty of oil, have condensed so much in the process of drying that they do not absorb the oil of the over-painting, there is no sinking in, but the impasto lacks cohesion; as the oil of the new stratum does not take root in the stratum below, there is no complete adhesion, and the durability of the work will not be assured. Each time that the painter wishes to add something, he should use a re-touching varnish capable of uniting the strata and thus ensuring the homogeneity of the picture.

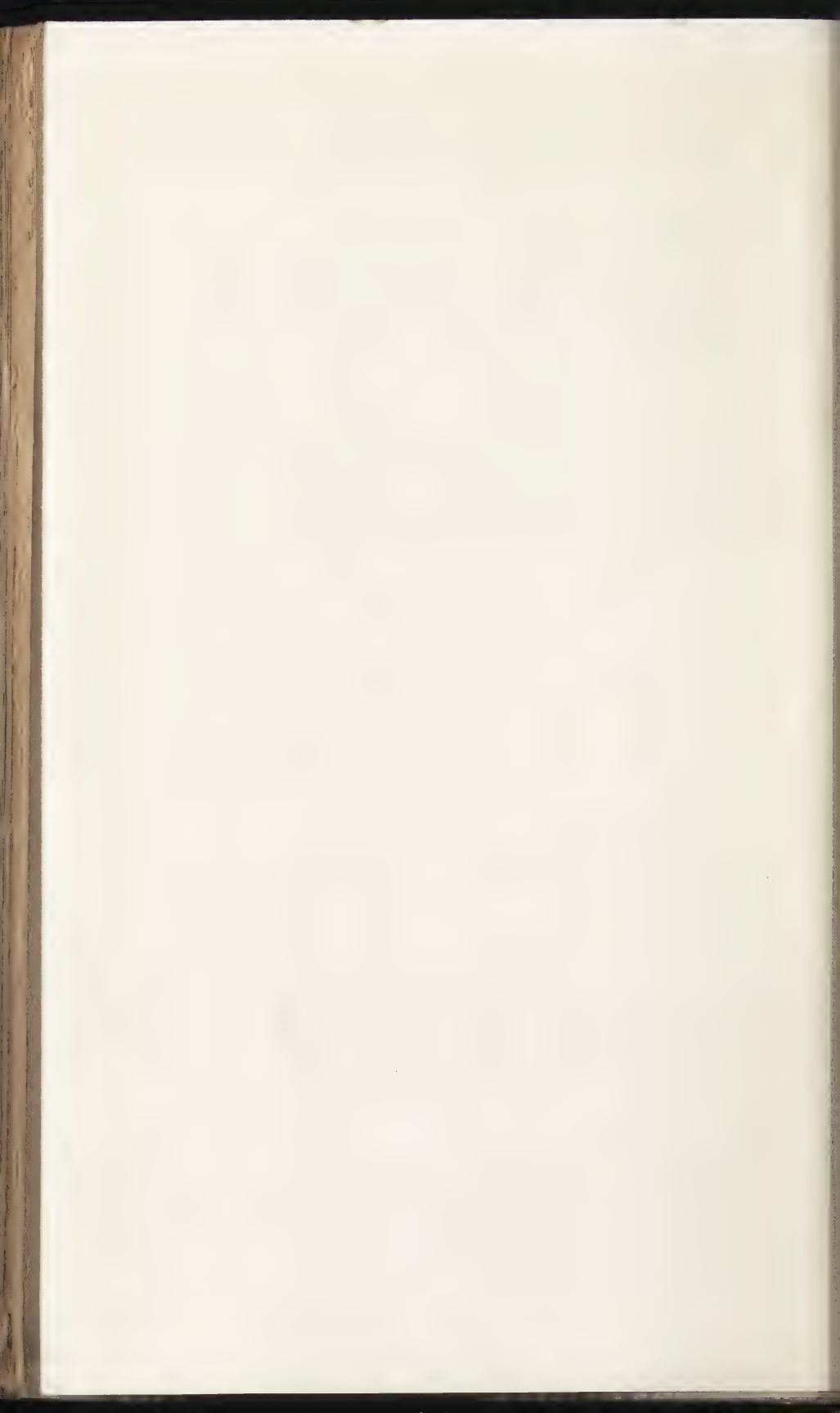
Oil-painting, by virtue of the opacity of its high lights and the transparence of its shadows, allows of great variety in execution, and enables the painter to obtain light or depth at will.

The result is that there are a great many different manners of painting in this medium, and it is the only process thus favoured. Broadly speaking, the traditional precept: *load the high lights, and keep the shadows thin*, will be found the safest rule, and the one most in accordance with the resources of the process. The loading of the high lights enhances their reflecting power, while the lightness of the shadows gives more freedom of effect to the oil and the varnish. This is the classic method most generally adopted. But by taking advantage of the absorbent quality of gesso primings, the colour may be absolutely flattened, just as an almost vitreous transparence may be obtained by glazes. The palette knife may lay on the colour in smooth, full, shining flakes, very individual in appearance. The brush again allows of a great variety of touch.

LOADED IMPASTO



Relief obtained by loaded touches : *THE FLAYED OX*, by REMBRANDT.



METHODS OF OIL PAINTERS

Some painters get their modelling and suggest form by sweeping strokes, which mingle the tones of light and shade, and give an intermediate half-tone, sometimes dirty, and often dangerous, though occasionally satisfactory; it is a lazy method, perhaps, but it has a certain poetic charm due to its monochromy. Prudhon, and more especially Henner, were masters of this kind of handling.

The manner which determines the half-tone, and applies it in a rich, full impasto, is totally different. The method of working in hatchings or juxtaposed touches is more modern; these may vibrate as with the Impressionists, but they do not always vibrate, if the tone has been used rather to model the form than to heighten the light, as some of our contemporaries use it. This manner when exaggerated becomes *Pointillisme*, another very varied process, which ranges from the quiet tenderness of Ernest Laurent to the scientific formula of Signac.

All these methods are very interesting, but their durability is questionable; they depend too often upon devices adopted exclusively to enhance the effects of handling, with little regard for the nature of the elements employed. We shall see, when we discuss the deterioration of colour, what serious consequences result from such carelessness.

At its point of departure, the under-painting or blocking in, oil-painting may invoke the aid of other processes. In our historical sketch of the various processes we have seen that many artists of the Renaissance laid in their pictures in distemper. The Primitives put oil glazes over under-paintings carried out in egg; it is therefore permissible to sketch in the composition with egg and water-colour, or

THE TECHNIQUE OF PAINTING

even with pure water-colour. Vibert recommends this process, but enjoins those who use it to varnish the water-colour before painting on it in oils.

Nevertheless, under-painting in oil is the favourite method, in spite of the tradition which attributes the use of distemper to the great Venetian masters, Titian and Veronese. Before it is worked over, this under-painting must be allowed to dry thoroughly. This will take perhaps a fortnight.

If at a later stage the painter wants to make changes, and to substitute a light tone for a dark one, the latter must be removed entirely with benzine* and re-painted in the desired tone. How many artists lack the courage for this irksome business! But when they see their pictures again after some years, they always regret their imprudence.

When we treat of varnishes, we shall describe the final attentions required by a finished oil picture.

Encaustic Painting.

The technique of the ancients is unknown to us. As we have seen in our history of processes, Vitruvius, Pliny, and Philostratus speak of it without describing its methods. In the eighteenth century, and at the beginning of the nineteenth, several learned amateurs and artists undertook very interesting researches. In 1884, Messrs. Cros and Henry at last formulated a method, which is not perhaps identical with that of the

* Rub the portion that is to be removed with a little cotton-wool dipped in benzine, and then scrape the paint until it is all gone. This method may also be used to reduce an overloaded part; for this, less benzine should be applied, and the scraping should be less drastic. Benzine evaporates very quickly, and has no after-effect.

ENCAUSTIC

ancients, but which is fairly practical, and enables artists to paint in encaustic.

The process has very appreciable advantages. The colours dry immediately, and it is possible to alter without scraping away the original passage. The wax gives transparence and relief. The colour does not scale; it is not affected by damp, and resists the attacks of worms. It may perhaps attract dust and retain it. But it is easier to remove this from it than from an oil-painting. Unfortunately, the process is a difficult one, and the subtleties of modelling are not easy to achieve in it.

The encaustic painter uses a stove made of metal or earthenware, in which he burns charcoal. This serves to—1. Prepare the coloured waxes. 2. Keep the palette warm. 3. Heat the irons which are used for modelling. In addition to this furnace, there is a palette, a disc of metal—iron or copper—coated with pewter; it has an iron handle set in wood, and the disc is stamped with a few hollows like little cups. Virgin wax is used, with a little colophony, which gives brilliance and tenacity.

The quantity of wax necessary for each colour varies in proportion as this colour is light or heavy of body. Messrs. Cros and Henry have adopted the following receipt, which is given in grammes according to the Comte de Caylus' formula. Mixtures of wax, resin, and powder are heated over a slow fire in a jar of enamelled or pewter-lined metal. When properly fused, these are poured into grooved wooden trays and put away out of the dust as soon as they are dry. Composite colours can be prepared in this way as well as simple colours.

When the painter is ready to begin, he puts the

THE TECHNIQUE OF PAINTING

CAYLUS' FORMULA.*		
COLOURS.	WAX.	WEIGHT.
White lead . . .	18 grammes.	30 grammes.
Ceruse . . .	20 "	30 "
Vermilion . . .	40 "	90 "
Lake . . .	45 "	30 "
Burnt ochre . . .	40 "	30 "
Roman ochre . . .	40 "	30 "
Ochre of ru . . .	40 "	30 "
Ultramarine . . .	30 "	30 "
Ultramarine ash . . .	24 "	30 "
Ivory black . . .	40 "	30 "
Green lake . . .	38 "	30 "

necessary amount of coloured wax on the hot palette. As soon as it is melted, it is laid on with an ordinary paint-brush. To model, irons of various shapes are used ; the artist modifies them to suit his taste. These irons, heated in the fire, serve to fuse the touches which have been too roughly applied by the brush. All kinds of material are used to paint on : wood (even fir), canvas with a size priming, stone, gesso, slate, cardboard and paper.

Solid or Raffaelli Oil Colours.

Mons. Raffaelli has invented an easy and expeditious process. It has all the facility of pastel, the colours are ready to use, and are made up into sticks. It is a derivation from encaustic, and the sticks seem to be composed of a similar mixture.

* The French gramme is 15·432 grains.

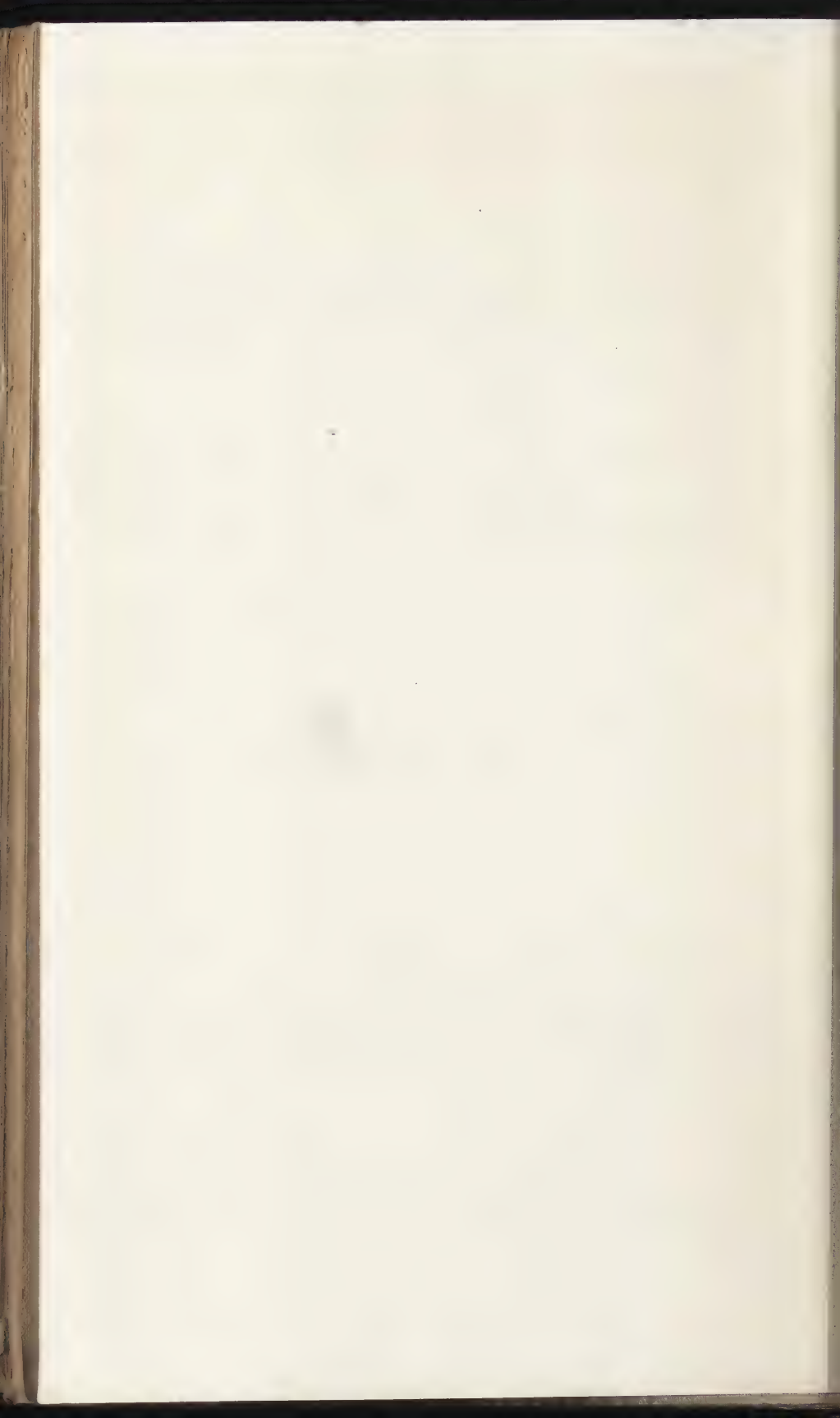
« ENVELOPPÉE » HANDLING



1. Fragment. Fat impasto, mode led in accordance with the forms.



2. Opaque shadows. SAINT-SÉBASTIEN, by RIBOT. (*The Luxembourg.*)



DISEASES OF PICTURES

They are used like a pastel or a coloured crayon. If the dull effect of crayon is desired, the painting must be left as it is; if the painter wants a luminous surface, he can varnish it with some kind of picture varnish; if he wishes his work to have the same effect as an oil-painting, he takes a brush, dips it in spirits of turpentine or petroleum, and passes it over the colour when the picture is finished. It will then fuse and assume the desired appearance.

Another way is to block in the composition with ordinary oil-paint and to continue with solid colours, or the picture may be painted partly with oil colours and partly with the solid colours, and finally varnished.

THE DISEASES OF PICTURES

The deteriorations to which processes other than oil-painting are prone are so inherent in the nature of the materials used, that we have noted many of them in describing these processes; we shall also deal with them again in connection with the preservation and restoration of pictures.

We know already that damp is the worst enemy of pastels and water-colours, and we have pointed out the best means of guarding against its ravages. We also know what defects should be guarded against in a wall on which a fresco is to be painted, etc.

Oil-painting, the process most in favour at the present day, is subject to accidents more numerous and complex than any other; its supports, its oils, its varnishes, its colours all undergo or bring about deteriorations. It is necessary to study

THE TECHNIQUE OF PAINTING

each of these deleterious forces. The material collaborators of the oil-painter call for the greatest care in preparation, owing to their importance to the future of a picture. And it seems the more essential to insist upon this, seeing that they are too often neglected, and that a false studio tradition tends to aggravate this neglect more and more.

I. DETERIORATIONS DUE TO BASES

The Wooden Panel.

The woods most in favour are poplar, tulip wood, oak, cedar and mahogany. Pine or fir, in common with all resinous woods, must be avoided; the resin exudes and works havoc in the picture. Mahogany is superior to all other woods: it dries more equably; it repels the attacks of worms, and finally, it is porous, allowing the paint to penetrate and adhere well. Meissonier used plane wood, the grain of which is very fine. Girardot speaks well of chestnut, which has the advantage of affording a lighter ground than mahogany; like mahogany, it is safe from the attacks of worms.

All panels should be absolutely dry, otherwise there will be expansion and contraction, and the movements of the wood will cause the paint to crack.

If the panel is small, a thin one may be chosen, for this will be more easily kept straight against the frame or between the grooves of the picture-box, and if it should get bent, it will be possible to straighten it.

Large panels, on the other hand, should be thick; they will then be less affected by the variations of the temperature. Nevertheless, it is well to parquet, or reinforce them by battens.

CRADLING OR PARQUETING

There are two ways of parqueting or cradling.

The simplest kind consists of slips of wood glued behind the panel. These slips, from 4 to 5 centimetres wide, are arranged in parallel lines from 8 to 10 centimetres apart. They are then notched at intervals of from 8 to 10 centimetres to receive cross-slips. The crossings are firmly glued together, and when the whole grating is dry and firm, it is, in its turn, glued to the back of the panel.

This summary process is used for little panels of thin or soft wood. Valuable pictures on larger and heavier panels require a more complicated system. The upright battens are either fixed to the panel with glue, or dovetailed into it. They are pierced at intervals to receive the cross-pieces, which are slipped through the holes, but not glued. These second battens are cut a little narrower than the notches, so as not to fill them up entirely, but to leave a certain amount of play to the movement of the panel, under the influence of variations in the temperature. The parqueting is a supporting corset, not an instrument of torture, which would induce evils as grave as those it seeks to remedy.

Although wooden panels resist destructive agencies better than any other supports, it is necessary to protect them against damp and insects by painting them on the back and on the edges. The panel (and its parqueting, if it is parqueted) should be entirely covered with paint. Some persons even advise that two coats of paint should be applied, and finally, one of varnish. Such precautions make the panel practically invulnerable to attacks from without.

THE TECHNIQUE OF PAINTING

This fact may be demonstrated by reference to the manner in which old triptychs, exposed for centuries to the damp of churches, have stood the test. The three panels of the same wood are not always in an equally good state of preservation. The two shutters, painted on both sides, have generally lasted, because the paint protected the wood from damp and from insects, whereas the central panel, only one side of which is painted, is too often damaged by their action; the atmospheric variations have caused it to warp, and the colour, unable to follow the expansions and contractions of the wood, has gradually cracked and scaled.

In Italy, panels were preferred to canvas until the Renaissance. After Raphael, canvas was very generally used; many large pictures such as the *Saint Michael* and the *Madonna di Foligno*, originally painted on panel, were transferred to canvas.*

In the Netherlands, panels were used until the time of Rubens. His *Virgin with Angels* in the Louvre is painted upon panel.

As it was necessary to join several boards together for very large pictures, painters bestowed much care upon the solidity of these junctions. Strips of canvas were glued over the joints of the panels, and sometimes the whole surface was covered with a canvas or a piece of tanned leather, a very ancient practice, noted by Cennini and by the monk Theophilus.† It is possible to paint

* See p. 201 for the transfer of the *Madonna di Foligno*.

† It has been found that on old panels, completely rotten, the size had remained intact, and that even at the joins, which had been strengthened by

CARDBOARD AND PAPER

directly upon a panel, without any preliminary preparation. It is sufficient to wash over the panel with rectified spirits of turpentine—not with water, for the damp might warp the wood—and then to rub it with oil, which will prevent the oil of the paint from soaking too deeply into the panel and producing excessive sinking.

Cardboard and Paper.

Cardboard and paper may be used for painting in oils without any preliminary preparation, but they are by nature fragile, and they absorb the colour. The cohesion is perfect, and some painters think that cardboard of the best quality is preferable even to panel, because it is safe from the ravages of insects and does not split. Personally, I should be afraid of its tendency to warp in the damp, and of certain black spots, which sometimes work through the impasto. In any case, the artist should be very careful of the quality of his paper or cardboard.

Paper may, indeed, be pasted on to cardboard. Girardot, the Orientalist, paints studies on white paper, laid on cardboard or panel with paste made of rye flour. He varnishes his study lightly with Vibert varnish.

Canvas.

Canvas, the support most generally used in our day, has the advantage of a flexibility that enables it to lend itself to the play of the paint, but as oil when directly in contact with the fibres of the canvas burns them, and very soon destroys them,

strips of canvas impregnated with this size, the wood had been preserved where it was thus covered (Vibert, *La Science de la Peinture*).

THE TECHNIQUE OF PAINTING

it is necessary to coat it with an insulating preparation.

When painters first began to use canvas as a base, they painted on a priming of size; they then attempted to paint without this insulator, but they soon recognised the ravages worked by the oil, and returned to the use of the priming.

A simple coating of size is sufficient to make a closely woven canvas—what is called a fine canvas—fit to paint on in oils. The canvas will be more or less absorbent according to the thickness of the priming; in other words, the paint will be more or less flat (*mat*) if the priming is thin, and will become less and less so in proportion to its thickness.

The adhesion of the colours is perfect, and this priming has the further advantage of not being liable to crack in the manner of thicker preparations.

The practice of painting on a canvas simply coated with size is therefore, if the flat tone and the difficulty of covering the surface be accepted, a most excellent process for the preservation of colour. Among contemporary artists, Gandara has adopted this method; Dagnan has also used it on several occasions, notably in his famous picture *La Cène*, now belonging to Mme. de Béarn.

Both artists tell me they are very well pleased with the results. Dagnan, however, admits that it is necessary to paint very thickly in order to give richness. I think myself that in white and high-toned passages the result is always a little dull.

This simple priming can only be applied to very fine canvases. On coarse canvases it would be

SIZE

difficult to get the paint even ; the most careful work would leave sinuosities and crevices very unpleasant in their effect. It is therefore necessary to use a thicker priming for such canvases.

But in any case, size is a primary necessity.

Sizes.

A size must be impervious to damp, imperishable, elastic, and non-injurious to colours. It must protect the painting from the destructive agencies that may arise from or through the canvas, or the panel, and its elasticity, which will enable it to yield to the play of the support, will prevent it from cracking.

The sizes most generally used are made of albumen, glue, gelatine, and caseine.

Albumen is obtained from white of egg beaten to a froth. The dry deposit of this is sold by artists' colourmen. It may be used for priming canvases, but it would be unwise to paint thickly with colours in powder on such a priming.

The size most commonly used, glue, was originally made from the feet, nerves, snouts, skins, and parings of any kind, of slaughtered cattle. It is now sold ready for use. But if made of inferior materials, it ferments and becomes mouldy, and contains germs of mildew, which develop under the paint and detach it from its support.

Conscientious artists' colourmen ought to prepare their own glue.

As for artists, if they want to have properly primed canvases, they should buy dry gelatine. Gelatine is glue purified and dried ; dissolved in hot water, it produces a size which is easy to use.

THE TECHNIQUE OF PAINTING

Caseine, an extract of cheese, is sold dry by dealers in chemical products. When soaked in cold water it swells, but does not dissolve until a few grammes of ammonia are added to it (to 20 grammes of caseine allow 100 grammes of cold water and 4 grammes of ammonia). It must be mixed by stirring it with a spatula of wood, glass, or horn (not metal); it will then yield an imperishable size, impervious to damp. Unfortunately, it is dry and brittle. To remedy these defects glycerine is often added (10 grammes for the quantity given above). The glycerine is mixed well into the size, and the whole is strained through a fine sieve or muslin.

The glycerine will enable the painter to lay on the size thickly, without any fear of its cracking; but as this glycerine robs it of its damp-resisting qualities, and, indeed, makes it very liable to mildew, it is better to dispense with glycerine and lay on the size thinly. If the artist wishes to preserve the absorbent quality of the canvas, the priming must be slight; a single thin coating will be sufficient.

Primings.

To make the surface of the support smooth and even, Paris white (whiting), pure or coloured with brown, black, or red powder, is used. Such were the primings most in favour in the seventeenth century, the disastrous consequences of which we have seen. At the end of the next century painters often mixed litharge with the preparation to make the colour dry faster, but as this covered the picture with granulations, the use of litharge

PRIMINGS

was abandoned. Mérimée declares that if the litharge had been well ground this inconvenience would have been avoided. This is possible. But Vibert, who mentions the practice, condemns it, together with all "siccative measures," which he thinks "could never improve the quality of a priming doomed from its nature to scale."

All these primings were laid on thinly, if the painter wished to keep his surface absorbent.

The priming of whiting and size, which the Primitives used on their panels, was, on the other hand, several millimetres thick; it was never tinted, but always perfectly white. It was also rubbed over with pumice-stone when dry and made extremely smooth.

But in any case, it may be laid down as an axiom that the canvas must be protected from the oil by a coat of size. True, size is not perfect; if badly prepared it becomes a medium of destruction. But if properly prepared it is a perfect insulator—the pictures of the old masters prove this—whereas oil is always destructive to canvas in the long run.

I am bound, however, to admit that there is not perfect agreement on this point. Jacques Blockx, in his *Compendium*, which is full of excellent ideas, condemns primings of Spanish white and size, and recommends the use of a mixture of oil and white lead.*

* It is enjoined in these terms: "There is a very simple way of avoiding the sizing of canvases, and preventing the oil from penetrating to their fibres. Fix the canvas on a stretcher and wet it. It will tighten by shrinking. Then cover it with a thick layer of a firm impasto, laid on with a strong knife" (J. Blockx, *Compendium*). This method would certainly imprison a certain amount of moisture between the canvas and the layer of paint, the consequence of which would inevitably prove disastrous. And then, setting aside the action of the oil, this proceeding would be very inconvenient, because of the accumulation of canvases which would have to be

THE TECHNIQUE OF PAINTING

Vibert concludes as follows : " All oil primings should be avoided, and the painter should be content with size. But it must be carefully chosen."

A single layer of white lead, lightly applied over dry size, makes a very good priming, but the surface will be rough and difficult to cover if the canvas is coarse.

A second layer may be applied when the first is thoroughly dry, but unless this is the case the oil imprisoned in the first layer will become acid and burn the canvas through the size.

This second coat, which must also be very thin, is designed to fill up the interstices of the canvas. The dangers of the over-thick layer of size menace the over-thick priming also, but with this difference, that whereas with size the consequences are at once apparent, with oil the canvas preserves its elasticity for several years ; when the over-thick preparation has thoroughly dried, it cracks and splits the paint above.

Two layers at most, then, will be a prudent prescription.

The inconveniences of the thick priming depend a good deal on the nature of the support. The suppleness of canvas requires an equal suppleness in the priming, which must be able to follow its movements. On panel or cardboard the rigidity of the support allows of successive layers of the preparation, if the painter is careful to see that one is thoroughly dry before the next is applied. Even for panel, however, a priming is no more indispensable than for cardboard or paper. Maxence paints

hung up to dry before use. Finally, Dinet has pointed out to me that if the moisture prevented the oil from eating into the tissue, it would also prevent the adhesion of the layer of colour.

PRIMINGS

directly on mahogany panels without any kind of priming.

As regards the tone of the priming, we have seen that the Primitives preferred white preparations, and that dark-toned primings worked terrible havoc in the seventeenth century.

White primings give transparence to glazes; they lend a richness of effect like that of painted glass. On the other hand, light tones, unless they are laid on very thickly, and contain very little oil or varnish, have an empty appearance over a white priming and lose a great deal of their freshness. The whole soon assumes a yellowish tinge.

With an absorbent canvas the under-painting, instead of working through in light tones, as with a light priming, takes on the colour of the over-painting; the upward struggle of the white is transformed into a downward effort. The result is reversed, and both the defects and qualities of the light priming disappear.* With dark preparations the high tones do not look empty, but they lack the solidity required to keep the ground in its place, and a uniformly monotonous tone gradually invades the picture. Poussin's pictures in the Louvre may be cited as examples.

We have seen that Oudry recommended primings in half-tones. This was the kind of priming adopted by Gérôme. He kept a store of canvases rubbed over in half-tones of various tints, and when he was about to paint, he chose the priming the colour of which gave him a ground in harmony with his subject.†

* Roll paints on absorbent canvases.

† The half-tone must be, of course, of some permanent earth or ochre.

THE TECHNIQUE OF PAINTING

As a general rule, when a canvas is non-absorbent, the priming comes through sooner or later, and a picture gradually acquires the tone of the preparation.

Taking this into account, the white priming would seem to be the best to use, for the effect of its action is to make the picture lighter, and when the artist is blocking in his composition, it leads him to paint more luminously than would a gray or dark ground. But he will be obliged, contrary to classic custom, not to paint his shadows too thinly, for if they are too thin they will offer less resistance to the priming. They must be painted with a moderate amount of colour, though they must be less loaded than the high lights.

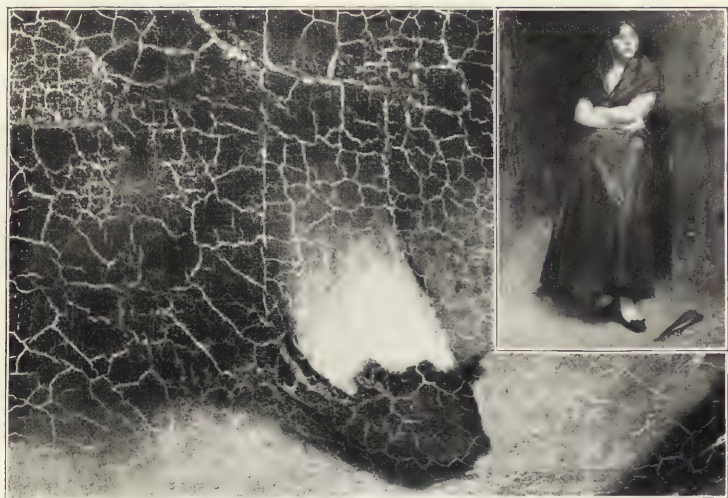
Choice of Canvases.

When buying a canvas prepared only with size, it is merely necessary to examine the quality of the canvas, and it will be useless to pay any attention to the size, which will always be dry. But if a canvas with an oil-priming be chosen, the artist should scratch it with his finger-nail to make sure that it is perfectly dry, and that he cannot remove any of the coating.

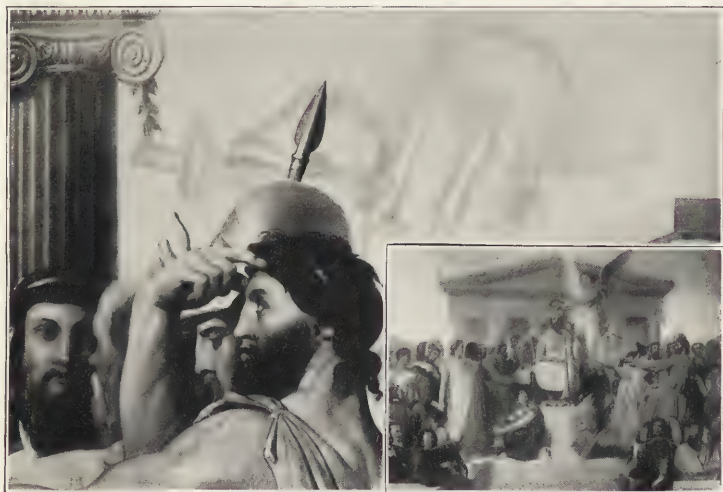
It is, further, wise to see if the priming adheres perfectly to the canvas ; that is to say, if it contains enough agglutinant to remain firm when it is covered with paint. A corner of the canvas should be rolled between the fingers ; it should yield to the pressure without cracking.

When a canvas has to be rolled up for transport, or for any other reason, the priming should be outside, and the canvas surface inside. Then, if

1. CRACKS. 2. PENTIMENTO



1. Cracks due to excess of oil and premature varnishing :
THE WOMAN WITH THE DAGGER, by FALGUIÈRE. (*The Luxembourg.*)



2. Underpainting insufficiently erased : THE APOTHEOSIS OF HOMER, by
INGRES. (*The Louvre.*)



PRESERVATION OF CANVASES

any cracks are made, they will be automatically closed when the canvas is released and stretched again.

Preservation of Canvases.

Two precautions can be taken for the preservation of canvases. The first consists of fixing on the stretcher a supplementary canvas primed with oil, *the priming turned towards the stretcher*; over this the canvas for the picture should then be stretched.

The other (and this is the method prescribed by Vibert) is to cover the back of the canvas with two coats of water-colour fixative. Coatings of india-rubber dissolved in petroleum, of wax, of shellac, and of resin are also recommended.

All these devices are intended to protect the canvas from the dampness of walls.

Vibert even advises a precaution against fire, which serves the further purpose of protecting the canvas against shocks from behind. It is to fix a metal plate on a light stretcher behind the picture by means of hinges. In proposing this cuirass, Vibert alludes to the fact that a picture which is treated with the greatest consideration when hanging often receives very rough usage when it stands on the ground with its face to the wall.

Girardot has pointed out to me that in course of time the battens of the stretcher mark and disfigure the canvas. He thinks this might be remedied by rounding the battens at the inner edges.* The idea seems to me an excellent one.

* This plan is now generally adopted in England.—[Tr.]

THE TECHNIQUE OF PAINTING

II. ACCIDENTS

Various Kinds of Cracks.

The cracking of a priming, as we have already noted, entails various disasters. It is necessary to make a careful study of these, and, in general, of all cracks due to supports, vehicles, and combinations of colours; we shall thus pass logically from the support to vehicles, oils, and varnishes.

The brittle preparation—a defect from which many works of the Flemish Primitives have suffered—is betrayed by regular cracks, in the shape of minute squares very close together, a kind of coat of mail which appears even upon such solidly painted pictures as those of the Van Eycks (see the *Virgin with a Donor* in the Louvre). This network of cracks comes from the size in the priming.

We have seen what dangers threaten canvases which have received a very thick priming in over-smooth layers. The over-thickness induces large, round spiral cracks, such as may be seen in the portrait of a young girl by Ingres, in the Louvre.

Over-smooth layers induce other cracks, in regular squares, an exaggerated form of the network already noted in early Flemish pictures. This kind of crack may also be caused by rolling the canvas the wrong way—i.e., with the painted surface inside the roll. The reverse process, as we have already pointed out, should always be adopted.

When a coat of dark colour is laid upon a light one not properly dry, the differences in the drying processes of the two cause a play of opposing forces, producing gaping cracks and rents which

DETERIORATION OF COLOURS



Cracks due to bitumen : CHERUBINI, by INGRES (*The Louvre*).



BLOOM

lay bare the under-painting. In a picture painted with colours too freely mixed with oil, cracks of the same kind will appear, forming tiny lakes or islands with indented edges.

Sometimes oil and varnish combine to commit misdeeds of a different kind. The varnish cracks and separates into regular flakes, detached from each other. This betrays both the presence of too much oil in the impasto, and the premature varnishing of the picture. (We shall see that varnishing should be postponed for a considerable time.) A very characteristic example of this kind of injury is to be seen in a picture by Falguière in the Luxembourg, of a woman holding a dagger.

When the prematurely applied varnish alone is in fault, it, too, produces cracks in squares, which expose the paint, and leave it open to a very dangerous enemy, damp. This makes its way between the flakes of varnish and gradually attacks the painting below.

Bloom.

The accident of varnish called *bloom* comes on rapidly, but may not increase for years.

It makes its appearance first as a kind of bluish veil or vapour overspreading the whole or a part of the picture. It is nothing in itself, but it is a significant indication, demanding immediate attention. Passing through picture galleries during the changes of the seasons, we often notice vague suspicions of bloom caused by the dampness of the atmosphere, which are as yet in their first phase.

The remedy is very simple. The varnish should be polished with a silk handkerchief or a chamois

THE TECHNIQUE OF PAINTING

leather, and a regular temperature should be kept up round the picture, which should be guarded against sudden exposure to heat or damp.

But this is not all. We shall see further on how all-important the place where one hangs a picture may be to its health. We may find in the same room two pictures, one in perfect condition and the other perishing. When bloom appears, it is necessary to discover the cause. It indicates a state of ill-health due to exterior causes.

The first stage in which the bloom appears as a bluish vapour may last a long time; it may even never get beyond this. But it may also enter upon a second phase, in which the vapour has a grayer tint. After this comes a period in which the resin pulverises. The varnish becomes disintegrated and the bloom whitens. Unless active measures are taken, the evil continues its ravages, the bloom begins to turn yellow; it darkens gradually and becomes black. At this point the evil has triumphed; the painting itself is attacked, and sometimes even the canvas.

Very intense moisture, water for instance, dropping upon a picture and lodging there—as in the case of a picture in the Versailles Museum, reproduced on pl. xix.—soon induces bloom. The varnish pales, whitens, is disintegrated and pulverises.

Prompt measures in the first stages of bloom are nearly always successful. But when the evil is too great, the doctor—*i.e.*, the restorer—must always be called in. Suitable remedies are prescribed in the chapter dealing with restoration.

Certain very characteristic cracks, of which the

RESTORATIONS AND CRACKS



1. Bloom caused by excessive damp.
MARIGNAN, by FRAGONARD'S SON.



2. Restoration by DURANDEAU, restorer of the Versailles Museum.



3. Cracks caused by thin painting, over a smooth priming
PORTRAIT OF M^{me} RIVIERE, by INGRES. (*The Louvre.*)



RAVAGES OF BITUMEN

Louvre has numerous examples among the French pictures of the nineteenth century, are the results of bitumen. They are marked by round blisters which have split into craters, or have run into streaks, giving the painting the appearance of a skin attacked by boils and torn by the resulting wounds. This is one of the most terrible ravages that a picture can undergo.

Bitumen, which never dries, separates from the colour with which it was mixed, melts, runs, carries away everything, disintegrates everything. After having travelled slowly among the layers of colour to which it belongs, it accumulates at a point where pigment, free from bitumen, and reinforced by the admixture of white or of some solid colour, bars its passage. There it accumulates, blisters the impasto, and forms a round mass in relief, which soon cracks and runs. It is sometimes a long while before it manifests its presence thus. In one of his articles Charles Blanc praised the solidity of Prudhon's *Christ*, painted twenty-five years before, which had shown no signs of deterioration. Go and look at it now. It is one of the worst ruins in the Louvre. It may have hung in a cool place, sheltered from the summer heat, for twenty-five years. A change of position, or the installation of a hot-air outlet near the picture, was enough to set the ravages of bitumen in action on the surface, after a long process of secret mischief in the depths of the impasto.

Over-Painting and Pentimenti.

We have seen that the painter must always be distrustful of under-paintings that have a tendency

THE TECHNIQUE OF PAINTING

to work through. All over-painting of a different value to that which it covers, light upon dark, or dark upon light, will be influenced by the tone it covers.

These loaded over-paintings are always, in the end, affected by the colour beneath them. The term *pentimento* is used to describe those ghosts which appear through the paint, like reminders of ancient faults which their authors believe to be forgotten, but which betray themselves nevertheless. Dark passages over-painted in light tones are the most obvious *pentimenti*. Sometimes they do not take very long to appear, and as in these days painters are very careless, we may instance a good many in contemporary works.

There is a *pentimento* in the Louvre, in the sky of the *Apotheosis of Homer*, to the right, above the figure of Alexander. Such carelessness is very surprising in the case of an artist as scrupulous as Ingres, and the vacillation it betrays is the more extraordinary, inasmuch as the picture was very rapidly executed.

In such cases the remedy is to scratch out the under-painting, to remove it with benzine, and to paint afresh on the new ground thus obtained.

In a picture by Velazquez in the Prado at Madrid, the *Equestrian Portrait of Philip IV.*, the horse appears to have eight legs. Velazquez supposed, no doubt, that he had finally obliterated the first legs under a heavy layer of the same tone as the background. But in the course of time the legs have re-appeared.

Photography often reveals re-paintings in a surprising manner, before they have actually manifested themselves as *pentimenti*.

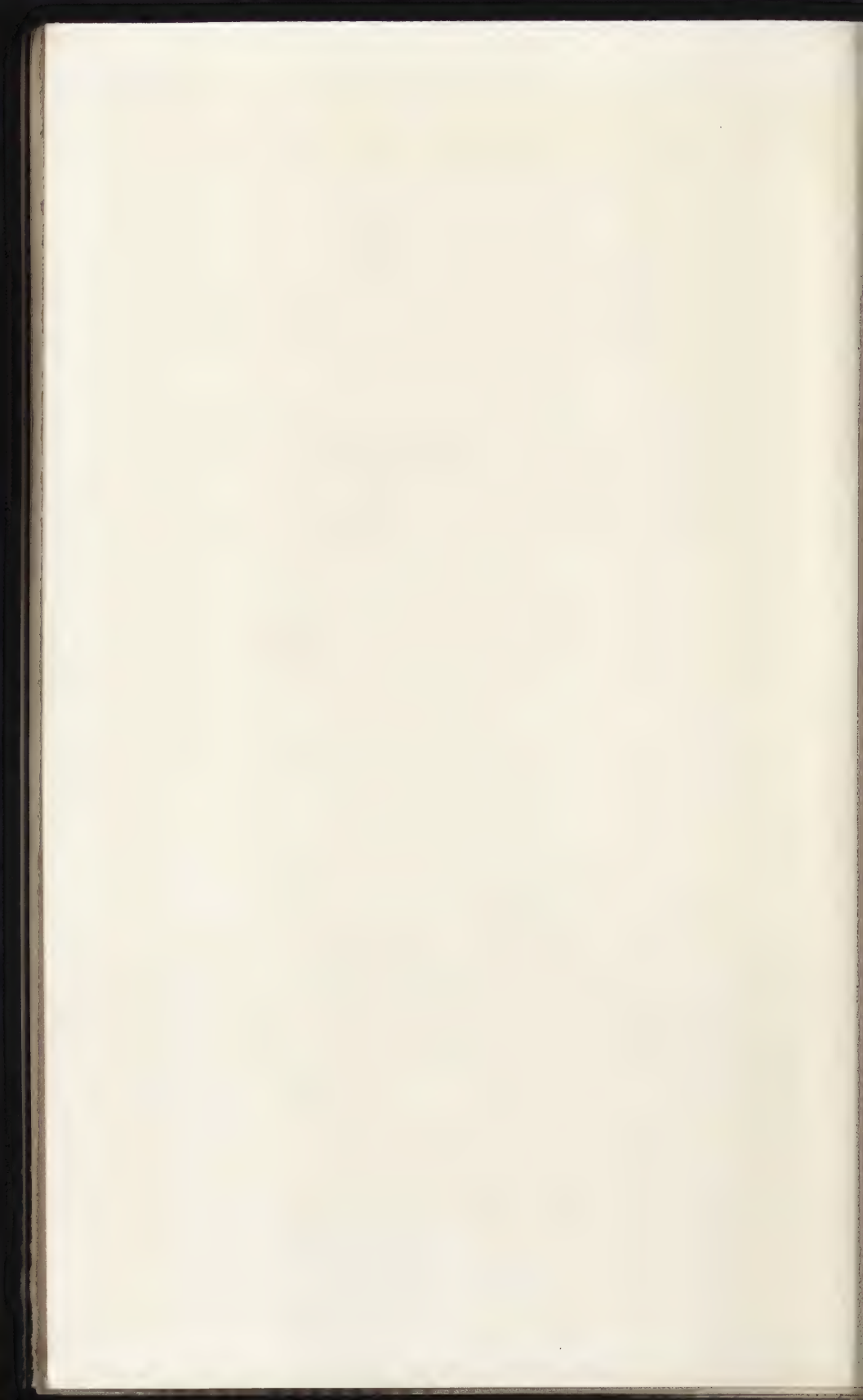
CRACKS AND REPAINTS



1. Pentimento apparent. Cracks due to premature varnishing



2. NYMPH, by HENNER (*The Luxembourg.*)



OILS

A firm of publishers proposed to photograph Henner's *Recumbent Nymph* (Luxembourg) for reproduction in a series illustrating Modern Art. The photographic plate showed such a *pentimento* that they had to give up all idea of reproducing the picture. The outline of the nymph's body was entirely surrounded by a second outline. Nothing of this is visible to the eye of the spectator at present, but it may be safely predicted that some day this charming work will be completely disfigured.

Girardot showed me a *pentimento* in the thigh of Rembrandt's *Bathsheba*. He also told me that in Gérôme's *Duel de Pierrot* at Chantilly the silhouette of an intrusive figure has made its appearance.

Oils.

Liquids very different in origin, composition, and properties are all classed under the generic term of oils.

The lightest kinds, called essential oils, are extracted by distillation from certain plants or resins, and are not viscous.

The so-called empyreumatic oils are obtained from wax, camphor, etc.

Animal oils are taken from animal substances. The only one with which we need deal here is oil of egg; it is no longer used by modern painters, but Vibert praises its qualities, and believes it will come into favour again some day.* Finally, there are the fixed oils, extracted from vegetable substances. Of these, linseed oil, poppy oil, and nut oil are used in painting, because of their siccative qualities.

* Vibert, *La Science de la Peinture*.

THE TECHNIQUE OF PAINTING

These oils dry without evaporating; they increase in weight and diminish in volume as they pass from a liquid to a solid state. This increase in weight is due to the oxygen they absorb. They are so transformed in the process that they are no longer sensitive to the same influences. Solidified oil is unaffected by any of the solvents which act upon them in a liquid state. Benzine is the only exception. On the other hand, alcohols, which have no effect on fresh oil, will dissolve dried oil.

Linseed oil, the most siccative of the three oils used in painting, is more transparent than poppy oil. But it is also yellower in tone. It turns acid more easily: a serious matter, since this produces abrasions in the painting. All sour oil should be rejected and never used for grinding colours. Its presence is easily detected in the tube.* Lake, for instance, is transformed into a paste resembling india-rubber. "When colours have got into this state," says Dinet, "they should be thrown away, for they will never dry, and they cause pictures to crack and blacken."

Nut oil is never used in France. French artists prefer the so-called *œillette*, or poppy oil. It is whiter than the others, but dries less quickly. Its limpidity makes it preferable for use in whites, blues, and violets to linseed oil, the yellow tone of which has an unfortunate effect on the tone of the coloured powder; but linseed oil is preferable for colours that take a long time to dry.

Cennini gives this receipt in his venerable *Treatise*:

"Pour the linseed oil into a cauldron of brass or copper, or

* The oil separates from the paint. It is useless to attempt to mix the colour and the oil again. This will not affect the acidity of the oil, and will not prevent its ravages.

SICCATIVES

into a basin; expose it to the sun in the dog-days, and if you can keep it thus until it is reduced by one-half, it will be perfect to paint with."

The formula has not been forgotten. I know many artists who adopt this method, and who keep an open glass jar full of linseed oil on the window-sill. Dagnan showed me one in his studio. This oil becomes a paste, and is highly siccative.

Siccatives or Dryers.

Whatever the nature of the oil used in grinding colours, the powder itself dries very unequally, and certain powders, such as crimson lake, ivory black, and zinc white, take a long time to dry.

As it is of the utmost importance that the various layers of colour in a picture should solidify equally, and as the conflict which results from the opposite case is one of the principal causes of deterioration, painters have cast about for a means of equalising the tendencies of white lead and Saturnine reds, which dry very quickly, yellow ochres, emerald greens, cobalt blues, and cadmiums, which dry normally, and blacks and crimsons, which dry very slowly. Siccatives have been compounded for the purpose. As oil is solidified by the absorption of the oxygen in the air, certain products are added to it which are called siccatives, because they attract oxygen and then yield it up to the oil, the oxidisation of which is accelerated by this process.

The siccative most in use is Courtray, a compound of oxide of manganese and oxide of lead in equal parts. (It is a form of Strong Drying Oil).

Courtray siccative is a very powerful dryer, which, however, is in very bad odour in studios.

THE TECHNIQUE OF PAINTING

It is said to rob oil of its suppleness, to injure certain colours, and to be itself very dark. According to Vibert, this darkness is the fault of the artists' colourmen, who imagine that it ought to be very black, and impress this upon the manufacturers. If it were put on the market chemically pure it would be much lighter.* It is said, further, that it causes paint to crack. But Dinet exonerates it on this count. "It has faults enough," he says, "without being made responsible for this in addition. It will only cause pictures to crack when it is mixed with colours laid over other colours before these are dry." We have already noticed that these super-impositions result in cracks.

Dinet even thinks that a dryer tends to prevent cracking. A dark colour which has been dried quickly will bear the premature application of a varnish, whereas without the intervention of the siccative, the colour imprisoned beneath the varnish dries more slowly than the latter, is subjected to its action, and cracks.

In any case, dryers should be very sparingly used.

Vibert recommends painters not to keep a dryer in a dipper attached to the palette. When this is done, the artist dips his brush into it mechanically, and far too frequently. When used lavishly, its action is not more effectual. It should only be employed for colours that dry badly, such as blacks and certain browns.

Dinet has given me a receipt by which some of the defects of Courtray siccative may be neutralised.

* Vibert, *La Science de la Peinture*.

ESSENTIAL OILS

Make a mixture as follows : One-quarter or one-third of Courtray siccative with three-quarters or two-thirds of linseed oil. Leave the bottle uncorked and exposed to the action of the sun and the air from one to six months. If a skin forms on the surface, break it, that the air may get to the oil. This mixture becomes more siccative as it absorbs the oxygen.

The mixture, which will be cloudy at first, will purify and even become lighter, while the substances which would have affected the colours settle at the bottom. When the work of purification is complete, decant the mixture carefully, and strain it if necessary ; a dark but transparent liquid will be obtained. This highly siccative oil, mixed sparingly with the paint, will give a better result than pure Courtray dryer.

Referring to other dryers, Dinet says in his little work on *Les Fléaux de la Peinture* :

"Flemish dryer and Haarlem dryer are not, properly speaking, siccatives, but rather excellent oily varnishes ; they harden paint by the resin they contain, but accelerate the drying process very little, especially in cold, damp weather."

Essential Oils.

As non-volatile or fixed oils turn yellow and dry slowly, painters have recourse to lighter oils, known as volatile or essential oils. Like the water in water-colour painting, they give great fluidity and disappear by evaporation.

Complete evaporation is only obtained with rectified essential oils ; all others leave a viscous residuum, which never dries, turns yellow, and

THE TECHNIQUE OF PAINTING

even blackens when the particles of dust in the air are deposited upon it. It is therefore necessary to use rectified essential oils, that is, oils which have been distilled and relieved of their resin. As this resin is generated again after a while, only oils recently rectified should be used.

The three essential oils in general use are : Spirit of turpentine, oil of spike, and petroleum. The first is extracted from fir trees, the second from lavender plants.

They should be kept in hermetically closed bottles to prevent them from turning to resin by contact with the air.

Petroleum evaporates and leaves no trace when it is used in a rapidly volatile form. It serves as a vehicle, after which it disappears entirely. But unless it is perfectly volatile, the presence of certain greasy constituents of petroleum—vaseline, for instance, which never dries—produces deplorable results.

Petroleum has its merits. It does not deteriorate in the bottle, or give pigments the gray, chalky tone produced by other essential oils, and it traverses the layers of colour by the little interior canals which intersect them; even when these have contracted by drying up, it penetrates them anew, carrying oils and resins with it, and gives additional cohesion to the different strata.

But sometimes petroleum precipitates oils and resins instead of mixing with them; it then forms a viscous substance which will never dry. It should therefore be subjected to preliminary tests with the materials the painter habitually uses.

VARNISHES

Varnishes.

In oil-painting, varnishes may be used in the execution as well as for the preservation of a picture. Thus they may be applied only as a final coating, laid over the colour; but resins dissolved in liquids, *i.e.*, varnishes, may also be mixed with the colours themselves.

Varnishes should be studied in their various functions: their composition, their use in conjunction with colour, and their services as a transparent substance laid over paint to preserve it and enhance its brilliance, should all be examined.

Composition of Varnishes.

Varnishes are composed of various resins dissolved in various liquids.

The principal resins are: amber, the different copals—Zanzibar, Angola, etc.—the lac known as shellac, mastic, etc.

Amber and copal dissolved in oil are called oil varnishes. When spirit is added, they form a *mixed varnish*.

Only spirit of turpentine is used to dissolve damar and mastic; a very clear but perishable varnish.

Venice turpentine, a resin which is inferior to the above, dries badly, yellows, and causes the painting to crack.

A petroleum varnish invented by Vibert is much used in studios, but it is not known what resin is dissolved in it. In his book, *La Science de la Peinture*, the inventor declares that "no resin at present in use is really fit to be introduced in painting." Nearly all resins are in a state of

THE TECHNIQUE OF PAINTING

disorganisation; in other words, they are subject to a continuous evolution which modifies their nature and proportions "from month to month."

"On the other hand," continues Vibert, "we have noted in several varnishes, varying amounts of a certain constituent which is non-divisible, colourless, hard, crystallisable, transparent, and soluble in oil or petroleum; this we may call *normal resin*, which has not as yet undergone any transformation."

With this normal resin dissolved in petroleum of different degrees of evaporation, Vibert is supposed to have compounded his painting or oil varnish, his varnish for re-touching, and even a picture varnish, for final application.

Many artists use these varnishes and are well satisfied with them. I have, nevertheless, heard Bouguereau complain of them. It must be said, however, that he had only tried them once, to re-touch a picture already finished. "It had cracked"; but it is hardly fair to lay the blame on the varnish, which was applied to substances in no way prepared to receive it. The best of remedies may do harm if used in unfavourable conditions.

Bail also told me that he was by no means pleased with Vibert varnish. But the artist's individual processes must always be taken into account in using these productions. Each one should make his own experiments.

Varnishes with a basis of alcohol should, however, be unconditionally avoided. A varnish of this kind was long popular in studios, and I could name contemporary painters who were its victims;

DANGERS OF CERTAIN VARNISHES

a restorer, who bound me to secrecy, made certain confidences to me on this score. Restorers are the doctors of pictures ; they know a great deal about their infirmities. But they are discreet, for neither artists nor collectors would forgive them if they gossiped.

In short, let us beware of varnishes with a basis of alcohol, even if they smell very good. Instead of binding the various strata of the painting together they isolate them, and form intermediate patches ; some fine day the painting will begin to peel off in strips and scales, because these varnishes, insoluble in oil, have remained isolated without assisting the general cohesion.

We must not forget that for a long period oil forms a soft and supple skin, which does not harden for over thirty years, say some ; while others put it at eighty. Varnishes, on the other hand, after the evaporation of the liquid which dissolves their resins, leave a dry, hard, brittle skin, very liable to shrink.

What will happen if a supple layer of fresh colour be laid upon this hard, retractile surface ? The soft stratum will yield to the action of the hard stratum, and cracks will appear.

We shall see further on that this action of varnish must not be overlooked, even when it is applied as a final layer, that is to say, as a picture varnish in the ordinary sense.

But when it is interposed between various layers of colour the more dangerous position may cause graver mischief. The use of varnish to mix with pigments demands the greatest care. The fact that it prevents the sinking in of colour

THE TECHNIQUE OF PAINTING

makes it a temptation to painters, and they are also easily seduced into the use of solvents to neutralise the troublesome dark tones which oil gives to their painting as it dries. But the consequences of these remedies used in the process of the work itself may be disastrous.

It would be wise only to use varnishes prepared with turpentine, with oil, or with spirit of petroleum, and to test them by admixture with oil, spirit of petroleum, and spirit of lavender; if they remain clear after several days, they may be used.

As to the sinking in of colour, this may be neutralised by rubbing over very lightly with oil and spirit of turpentine, which will evaporate after showing the real quality of the tone that has sunk.*

If a remedy less cautious, more active, and more certain be preferred, a little oil may be added to the resinous varnish used, which should be extremely light (*i.e.*, the proportion of resin should be small to that of spirit); this will make the varnish more capable of amalgamating with the oil in the paint. The varnish will be less brittle, the oil will become harder, the connection is made easier and the cohesion more complete.

The painter may continue on this path; he may use colours ground in oil mixed with varnish, and he may varnish, during and after his work, with varnish containing a little oil; the affiliation of the substances will make union more possible.

* The most detestable receipts are in favour in studios; pomades containing wax, alcohol, varnish, and finally this popular and incomprehensible nostrum: A mixture of one-third of alcohol, one-third of water, and one-third of oil, well shaken before use. The best plan is to practise discerning the exact tone *through* the sinking, and to paint upon it without any expedient for lightening it. The painting will gain in unity by this method. Gérôme recommends it, and Girardot, who habitually practises it, is well satisfied with the results; his paintings never suffer from changes of tone.

OIL VARNISHES

It is very probable that the famous process of the Van Eycks and of the Flemings down to Rubens was a mixture of this kind (linseed oil and mastic, say some).

The personal taste of each artist will intervene in his practice. Some like to handle a very fluid material, others prefer one that is thick and viscous. Colours prepared with resin are rather sticky, and some painters introduce it even at the moment of execution.

Oil varnishes without spirit, like copal, give an unctuous vehicle which dries slowly.* Those who prefer a material which dries quickly, is viscous and causes the brush to drag, naturally have recourse to varnishes made with spirit, which are more or less siccative according to the quantity of spirit used. If a little oil be allowed, the mixture dries moderately fast; when the oil is replaced by mastic, damar, or petroleum it dries very promptly. But this exclusion of oil presents dangers; the abuse of resin produces cracks in certain cases, in the glazes, for instance.

Re-touching mixtures which contain wax should be avoided. Wax is not injurious to the stratum of colour it covers, but it prevents any matter applied to it from adhering; strata or re-touches laid upon it will not hold.

This lack of adhesion is so complete that Dinét made the following observation to me: "The painter who wants to get a *mat* effect, and obtains

* Mons. Carolus Duran recommended me copal, which he uses habitually. Here is a receipt which Gérôme gave to his pupils: Four parts of copal mixed with Durozier oil, and three parts of rectified essential oil. Mix them by pouring the essential oil into the copal in several portions, and stir well to prevent it from precipitating. Girardot assures me that this gives the painting the solidity of a flint.

THE TECHNIQUE OF PAINTING

it by laying a thin solution of wax over his picture, may rest assured that no restorer will ever be able to re-touch his work ; every fresh re-touch will fail to adhere, and will come away with the slightest friction as soon as desiccation is complete."

If we sum up the services varnishes may render, we shall see that, mixed with colours more or less freely, they either give an added transparency to the colouring powders or make them denser. The utmost degree of transparency is obtained by resins—copal or amber—dissolved in oil without any spirit ; the addition of spirit gives a duller, grayer, more chalky tone after it has evaporated. But the use of all varnishes for actual painting and re-touching is very questionable, and the mixing of varnish with pigment, though it has been practised by all the great oil-painters, is fraught with danger under the present conditions of painting and materials.

Varnishing.

Varnish is applied to a finished picture to bring up the sunken portions, to give transparency, and to protect colours from external action, mainly that of the gases in the atmosphere.

This service it certainly renders, but often at a heavy price.

Let us suppose that a picture has been executed under the most favourable conditions as regards solidity and preservation ; that there is nothing to fear from its support, its priming, its oil ; that the colours have been applied in normal strata and in accordance with the rules of a sound technique.

BLOOM

The final coat of varnish may darken it, turn it yellow, and make it crack.

It may, in the first place, suffer itself; that is to say, it may be attacked by maladies which will decompose the resins of which it consists. It may also affect the painting beneath it, in consequence of its wrong use, or of the abnormal conditions in which it has been applied.

The natural enemies of varnish are heat, damp, sudden alternations of heat and cold, air and light.

Heat swells resins and softens them, then, as it subsides, it makes them liable to shrink. The surface crinkles, cracks appear, and air and damp enter by these interstices.

Damp may have been imprisoned under the varnish at the moment when it was applied; it may also lodge upon the surface, and slowly penetrate the resin. This causes the bluish formation known as "bloom," the first stage, as we have seen, in the commonest disease of varnish.

When warmth is restored, naturally or by friction, the blue tinge of the first attack of bloom disappears, but the varnish remains pervious; the slightest change in the atmosphere brings back the bloom, and the decomposition of the resin begins.

When heat has caused the varnish to crack the bloom is stronger, because the damp penetrates the fissures very easily.

The air and the chemical rays of light destroy the clearness and transparence of varnish. It yellows first all over, which adds a certain charm to the picture. This is the golden tone of many old pictures, which has completely transformed

THE TECHNIQUE OF PAINTING

them; Rubens' *Helena Fourment and her Children*, in the Louvre, is an example of this.* But the agreeable monochrome of this yellowish tone increases till it becomes a dark brown. After an interval, longer or shorter according to its quality, the varnish loses its transparence in the shadows, thickens, becomes dirty and pitch-like in the high lights, greenish in the shadows. When it has reached this state the decomposition of the resins is complete.

We shall study the remedy for this state of things presently when we discuss the varnishing of pictures.

The preventive method, or rather the precautions to be taken when varnishing a picture, may be summed up as follows: Test the powers of resistance of the varnish to which you are about to entrust your work. As the enemies to be guarded against are light, heat, damp and alternations of temperature, all one has to do is to submit the varnish to similar but more violent conditions. By exposing it to all the vicissitudes of the open air, it will in a few weeks have been subjected to the varied and reiterated attacks of light, heat, and moisture, which will reveal its powers of endurance. If it behaves satisfactorily, it may be trusted; if not, a substitute must be found.

"Whereas some varnishes become brown and opaque after a few weeks of exposure in the open air," writes Dinet, "I have experimented with others which retained all their brilliance and trans-

* See *The Card Party*, by Pieter de Hooch, in the Louvre. Some of the varnish has scaled off the pavement at the bottom of the canvas. The paint below is very light in tone, whereas the rest of the picture is golden.

VARNISHING

parentage after undergoing the rigours of the weather for over eighteen months. In ordinary conditions, I should say that they would last for several hundred years without deterioration."

In any case, the addition of a little oil to a resin, whatever its quality, will arm it against damp.

We will now consider the actual operation of varnishing. Varnish may suffer from the unfavourable conditions in which it has been used.

Broadly speaking, it may be said that varnishing has never been so badly done as at the present day. In most cases the operator begins by imprisoning a certain amount of damp under his varnish.

As every picture to be varnished may have caught and retained particles of dust, it is washed to remove this dust.

When it is found sufficient to use pure water only for this washing, and the picture is well wiped and thoroughly dried after the process, no evils are to be feared. But in our modern towns dust is greasy and tenacious, and will not always yield to water. Painters then have recourse to soap, or at least to slightly soapy water. *Nothing could be more fatal to the future of the picture.* The soap slips into the crevices even of the smoothest painting; in a picture where a loaded impasto creates more numerous cavities, it is almost impossible to remove it. It remains, never dries, and attracts the moisture either through the canvas or through the resin of the varnish. And some fine day bloom appears.

The best method of cleaning before varnishing, the most prudent and the safest, is to use spirits of turpentine or of petroleum.

As they evaporate very quickly, and as their

THE TECHNIQUE OF PAINTING

action ceases at once, they may be used without any ill effects if the operator is fairly skilful; but he must not forget that they are strong solvents, and that caution is required.

Water mixed with spirits of wine may also be used.

Benzine must be avoided; its action is too rapid and too strong.

When re-varnishing a picture which has already been varnished, water mixed with a solvent should not be used, for the solvent would attack the upper layer of varnish, and the water introduced would remain and would cause bloom.

Finally, a preliminary varnish, which is often used in the studios of young painters because it is convenient and cheap—varnish prepared with white of egg—must be condemned unconditionally. It is surprising that its ravages should not have been recognised and pointed out sooner. It makes the painting dull, covers it with a kind of leprosy, and never disappears altogether when it is removed to make way for the permanent varnish. As this operation is never complete, some of the white of egg is imprisoned under the cuirass of new varnish; in other words, a damp-producing agent is introduced which will give rise to bloom.

After careful cleaning the picture should be varnished in a very dry room at a temperature of 20° C. (68 F.). If it has been painted entirely with oil, this will be sufficient; if resins have been used, it may be put in the sun. This warms it, and it will be all the better for it. But this proceeding would be dangerous to a picture painted exclusively with oil, and lately finished; the varnish

VARNISHING

laid upon the warm paint would dry still more quickly, and a conflict would ensue during the process of desiccation. Cracks would soon make their appearance.

In spite of all precautions, varnish, as we have seen, may be attacked from without by damp. When a vapour covers its polished surface with a haze, the resin will be attacked and gradually decomposed, if its solvent has not made it impervious to moisture. Varnishes mixed with spirit and with petroleum are less resistant than oil varnishes, which, when applied under proper conditions, do not become cloudy, and protect the resin better against damp.

When dealing with bloom on a picture we saw that varnish, when applied too soon, allows the damp to penetrate, and produces chill. It will now be well to return to this question of varnishing, and of the proper time for it.

It is, of course, well known in studios that varnishing should be put off as long as possible. But the exact opposite is really customary. The annual exhibitions of the Salon necessitate varnishings not only premature, but executed under conditions most adverse to care and cleanliness. Now varnish on a painting which is still drying after this varnish has dried, produces either enormous cracks or tiny, almost imperceptible ones, which rob the colour of its transparency, give it a tendency to sink in, and make the layer of resin turn black.

If it is impossible to wait long enough before varnishing, it is prudent to paint with resins mixed with the oil of the paint itself.

Dinet is in favour of a varnish made of gum

THE TECHNIQUE OF PAINTING

mastic and essential oil. He thinks it stands restoration and transfer better. As this varnish is expensive, it is sometimes mixed with inferior resins, balsams, Venice turpentine, copaiba, and Canada balsam, which make it more liable to deteriorate, but also cause it to dry more slowly, and permit of a more confident use of it when premature varnishing is necessary.

The varnish should be laid on very thinly. "Whatever the varnish may be," says Dinet, "it should never be laid on thickly; the upper skin, drying faster, will prevent the under part from hardening, and cracks will inevitably show themselves. . . . The picture should, of course, be protected from dust and moisture until the varnish is perfectly dry. This will be in a few hours, if a spirit varnish be used, and a few days, if the varnish be an oily one. Heat and light accelerate the process considerably." Finally, the artist must not be too lavish with the number of coats he applies, even if they are thin and properly dried, for the thicker the varnish, the more power it has over the colours, and the more it will blacken. Generally speaking, a thin varnish is best. We shall return to this question when we discuss the removal of varnish and restoration.

III. THE DETERIORATION OF COLOURS

In England, the chemists attached to certain artistic societies analyse the colours sold by tradesmen, and indicate their composition and the reactions to which they are subject either by intermixture with others, or under the influence of

ANALYSIS OF PIGMENTS

atmospheric agents. Other precautions have been suggested. Vibert in his book on painting, proposed that painters should require artists' colourmen to give the chemical formula of each pigment on the label of the tube containing it, side by side with the usual name of the colour.

"Thus," he adds, "if the tradesman should not furnish the article he describes, he could be summoned like any other tradesman guilty of adulteration. Whereas at present the artist cannot even complain, for such descriptions as nasturtium lake, geranium lake, Chinese vermilion, etc., which artists' colourmen give to their wares, no more bind them to anything than do the terms golden yellow, malachite green, Venetian red, etc."

Some tradesmen have adopted the chemical formula on each tube, but the practice is far from general.

The chemist who analyses colours, however, although he may give us very useful information, cannot furnish any absolute certainty. He does not know what are the processes of each painter, and in practice, many unforeseen causes may invalidate his predictions. Certain reactions predicted by him may not take place in certain cases, because the oil or the varnish may have isolated the molecules of the colours which were used, while in other cases this same oil may have hastened the decomposition of two substances which the chemist thought capable of agreeing.

Dagnan told me that when he was a young man, he once began to paint on a bad canvas, saying to himself: "I will just do everything I can to make it crack." He accumulated all the negligences

THE TECHNIQUE OF PAINTING

which are reputed most dangerous. The result was that the painting remained perfectly solid and intact. As, however, he did not keep the canvas, and cannot tell in what state it might have been by this time, his little experiment can hardly be considered conclusive. Still, certain deteriorations begin very quickly; his experiment therefore goes to prove that an artist must create his own method by testing the solidity of the results he obtains. Every method of painting includes a certain empirical element which does not, of course, escape the natural laws of chemical combinations, but which often escapes attention in virtue of its unconscious origin. It acts one knows not how nor why. It is repeated involuntarily. If it is good, the artist must submit and profit by it; if it is bad, he must renounce it.

Chemists may in the future produce new colours to take the place of those which are still defective. During the past century they have given us colours no less brilliant than durable, which have been of inestimable service. Unfortunately, these happy discoveries have been discounted by some fatal inventions, such as that of aniline dyes, the treacherous splendours of which have seduced so many artists and ravaged so many pictures.

Vibert's plan, which is in truth very practical, would have the advantage of making fraudulent compounds less frequent, but it would do little to enlighten artists, who for the most part are incapable of deducing from a chemical formula the result of using the colour represented by that formula. It would, however, give painters more confidence in the products sold to them.

ACTION OF LIGHT ON PIGMENTS

The best practical method in the present state of things is set forth by Dinet in his volume on *Les Fléaux de la Peinture* (*The Scourges of Painting*). Other artists, notably Brascassat, tried similar, but less practical experiments.* The method is empirical, and this places it within the reach of all. The artist defends himself unaided and in a very simple manner.

The chief causes of the deterioration of colours are the action of atmospheric gases and of the chemical rays of light.

We have seen that varnish acts more or less as a protection against atmospheric gases. It is not a perfect shield, but it is the best we know so far. Nevertheless, for some years past, the practice of framing pictures under glass has grown in favour. The glass protects them from dust and from the alternations of heat and cold. But this method can only be used for pictures of moderate dimensions.

To protect colour from the actinic rays of light, which fade some colours and blacken others, the sole method is to cover the picture with a curtain, removed only at intervals. But this method, which protects the colour against the luminous rays, exposes it to the action of darkness, which turns the oil yellow.

All colours or combinations of colours which are over-sensitive to light should be banished from the palette.

As the light on a picture in normal conditions—

* Brascassat used to spread his colours on a board, and put them in the sun; later, he compared these with the colours not so treated. It must be admitted, setting aside their artistic value, that Brascassat's pictures have stood well.

THE TECHNIQUE OF PAINTING

that is to say, in a room or a gallery—is very moderate, we are enabled in a very short time to arrive at a result which will enlighten us as to the consequences of continuous exposure in normal conditions, if we expose specimens of colour to the prolonged and violent action of full sunlight, the force of which is enormously greater than that of light indoors, though their composition is identical.

“If,” says Dinet, “it takes five minutes to make a piece of photographic paper exposed to the full light of the sun turn black, it will take more than five hundred minutes to blacken this same piece of paper if we fasten it to the wall 10 feet from the window in a well-lighted room; that is to say, in the light in which a picture is commonly hung. As the phenomenon is identical in the case of colours, we may suppose that those which have resisted the direct light of the sun for a year, will endure for centuries under the ordinary conditions in which pictures are exhibited.”*

The colours to be tested should be laid upon a very dry canvas. They should be placed vertically in streaks of pure colour, in scumbles, in glazes, and in various mixtures, principally with white. When the colours thus spread are quite dry, the canvas should be cut horizontally, so that each colour is halved. The operator will thus have two identical pieces of canvas for his experiment. One half should be kept in a dark corner of the studio, at some distance from the stove, the emanations from which might affect the experiment. The other half should be exposed to the full light of the sun at noon.

* Dinet, *Les Fléaux de la Peinture*.

TESTS TO APPLY TO COLOURS

At the end of six months—six summer months, if possible—the two pieces of canvas should be compared. Those colours which have stood the test may be considered fairly durable. Certain colours, and amongst these are some of the most indispensable, could not endure a longer term of exposure.

The two pieces should then be replaced, and the experiment should be prolonged for another six months. When the piece which has been exposed to the light has been tested for a year, the colours which remain intact may be considered durable. They will not change. If they should deteriorate in normal conditions of exhibition, in the modified light of a museum, the change must be attributed to other causes, and not to the light. The guilty factors will be the oil, the varnish, or some other agent.

The great manufacturers who furnish nearly all the colouring matter used by artists' colourmen give excellent products. But certain colours require purification and washing, delicate and indispensable operations, which wholesale manufacturers sometimes find it difficult to carry out properly, in consequence of the large quantities of material with which they have to deal.

Manufacturers less important and less famous are sometimes able to operate more skilfully and carefully. Each painter should compose his own palette of durable colours, after experiments conditioned by his individual methods of painting. This is a very important point, for the intervention of special methods may introduce new elements which will bring about complications and produce the most unexpected results.

THE TECHNIQUE OF PAINTING

White.*

White is one of the most important pigments used in oil painting. It must cover well, and it must be of such a nature as to form part of any mixture, without causing the colours with which it is combined to deteriorate.

Meudon white, which has been banished from oil painting, is only used with pastel and tempera. It could be trusted to stand well, if used with oils, but it does not cover, and it dries very badly.

The best whites to use with oils are zinc white and silver white, which is carbonate of lead.

Though far from perfect, silver white is the best of these products, and it is preferable to zinc white. Unfortunately, it turns black if brought into contact with sulphurs, either on the palette or in external agents such as atmospheric gases.

It does not always combine readily and safely, as it affects certain colours adversely; for instance, it absorbs madder carmines and lakes, and causes them to disappear completely.

Finally, its poisonous nature makes it dangerous to use. Some artists have fallen victims to it. Painters should not contract the habit of smoking cigarettes while they paint. The hand, smeared with the paint, may touch the lips or leave particles on the cigarette; and the poison will pass into the blood through the slightest scratch. Regnault was nearly killed by a still graver act of carelessness; he cut a piece of bread with his palette knife, to

* The purely practical information which follows does not touch upon the chemical composition of colours. It is based upon experiments made by Dinet for some twenty years. I have added here and there some details taken from writers who have treated of colours, and have also gleaned from contemporary artists.

WHITE LEAD

which, no doubt, some particles of the paint adhered.* Painters should not, as they too often do, when washing their brushes with soft soap and water, knead them with their fingers. The white lead may penetrate a scratch on the hand. This may be nothing, but by constant repetition the evil will do its work. There is too much carelessness on these points in studios.†

In spite of these defects, white lead is of great service, for it has also very valuable qualities. Mixed with oil, it forms a solid paste, very agreeable to handle, which dries quickly. Oil, moreover, modifies its dangerous action by retaining its particles and preventing them from floating in the air. The dangers against which artists are warned above are greater when the powder is used in body colour or tempera, that is to say, with water, which leaves it more volatile than does oil, and does not retain it.

Oil also prevents it from turning black when combined with certain colours that contain sulphur. Cadmium and ultramarine, for instance, well washed and freed from an excess of sulphur, may be mixed with white lead without fear of results. Oil also safeguards white lead against the sulphur in the air. Varnish, moreover, protects it entirely from this.

White lead is banished from drawings in water-colour and body-colour (when neither fixed nor varnished) because of its susceptibility to the action of sulphur. The gum, which is the only agglutinant

* Duparc, *Correspondance de Henri Regnault*, 1904.

† About twenty years ago a young pupil of Bouguereau's died of lead-poisoning. The fact was told me by the doctor who attended him.

THE TECHNIQUE OF PAINTING

used, does not protect it. It blackens terribly and very rapidly.

It has another serious defect, which is that it absorbs madders and Saturnine red (red lead). We shall return to this when we consider the various reds.

Zinc white, which has no action upon colours, is non-susceptible to sulphurs and non-poisonous; it is chemically perfect, but, in practice, it dries badly and often cracks. It should only be used in exceptional cases, and then with caution.

In water-colour and gouache, it is free from the defects it shows when mixed with oil. Mixed with water and gum, it dries and covers almost as well as does white lead mixed with oil. I may note a curious detail in this connection; zinc white ground in water may blacken slightly if exposed to the sun; but it regains its brilliance in a more subdued light.

As oil has a tendency to declare its presence in colours laid on a palette, it sometimes happens that a white will take on a yellowish tone when drying in the shade; the oil is the cause of this; it has nothing to do with the quality of the white.

As these two colours are unaffected by light, it is useless to submit them to the test of exposure to the sun. The artist must take care, however, to buy them from a good colourman.

Reds.

The reds derived from iron are the durable reds; whether alone or in mixtures, they never perish.

VERMILION

TABLE OF REDS.	
DURABLE REDS.	REDS TO AVOID.
Red ochre Venetian red Mars red Cadmium red, called Cadmium vermilion	Cochineal carmines Madder carmines Mercury vermilion Crimson lake Geranium lake

Vermilion.—Vermilion may be called the last conquest of science, the most recent durable colour due to the labours of chemists.* Until the present day, vermilion was a sulphide of mercury. Mixed with white lead, this vermilion darkens it. It turns dark itself under the influence of light. If well prepared, it lasts for some time, but if not, it deteriorates rapidly. There are portraits, the fresh complexions of which have darkened in a few years. It will be therefore wise to renounce this treacherous colour in favour of the new cadmium vermilion, which, if well prepared, is perfectly durable.

Old writers in their treatises speak of the fragility of this mercury vermilion, which they call cinnabar. Yet in some cases, notably in Dutch and Flemish portraits, it has stood very well. This may be due to their having been kept in semi-darkness, sheltered from direct rays of light; the thick yellow varnish with which they are coated may also have modified the chemical action of the light.

We must not forget, moreover, that restorers, when they remove the varnish from a picture, nearly always take off the upper skin of the

* As a fact, it is a dark cadmium which does duty for vermilion. Chemically, this colour is not a vermilion, but a cadmium red.

THE TECHNIQUE OF PAINTING

vermilion, as we shall see later. Naturally fragile, and possessing little affinity with oil, it adheres to the varnish and comes off with it. As this skin alone has darkened, it leaves the red below exposed, and this, having been protected from the light, is much brighter. But in an old picture, these resuscitated reds are disconcerting in every sense, and on looking closely at them we see that the half-tones and the light shadows have disappeared. The reds are too raw and flat.

The bold restorer who wishes to rejuvenate a picture always begins on the reds, which will freshen up his picture and give it a seductive appearance. He puts red on the lips, the cheeks, and the draperies. Good people who are fond of chattering about art always praise the reds of the old masters. These venerable reds are often younger than their admirers.

In any case, even if they are not so modern as this, they may very well date from the eighteenth century, a period when the works of old masters were restored audaciously, on a system by no means reverent of artists or their creations. In the catalogues of the royal galleries and collections which were the basis of the Louvre, we may read detailed accounts for restorations which give us very definite information on this head. These accounts record expenses incurred for materials to re-touch and to glaze the draperies in the Marie de' Medici series and other pictures. Rubens, whose brilliant tones are so much admired, was therefore himself brightened up by restorers.

Signs of the removal of the vermilion together with the old varnish are to be seen in his *Adoration*

LEONARDO'S (?) BELLE FERRONNIÈRE

of the *Magi* (below, to the right), and in one of the draperies in the *Triumph of Religion*. The same injury may be noted in a portrait of the President de Mesne, by Philippe de Champagne, in the Salle La Caze (Louvre). In the so-called *Belle Ferronnière*, attributed to Leonardo da Vinci, we have a very characteristic example of vermilion that has darkened.

The *Belle Ferronnière* wears a red garment, the dull, heavy, pasty texture of which is in itself highly suspicious. It may be said that the modelling of this gown is very perfunctory. But a reflection in the shadow of the left jaw proves the deterioration of the colour beyond question. This reflection, which comes from the red garment, is naturally red; but it was no doubt painted with a colour more durable than vermilion, for it has not darkened at all. As it is not only light, but lighter than the red gown which gives it its colour, we cannot doubt that the vermilion of the garment has darkened after a removal of the varnish which carried away the upper skin and part of the modelling.

Among the numerous passages of the *Treatise on Painting* which deal with reflections, I find this, which gives a certificate of authenticity signed by Leonardo himself to the coloured reflection in *La Belle Ferronnière*:—

"The colour nearest to the reflection tints the reflection. . . . Therefore, painter, put into the reflections on faces the colour of those parts of the garments which touch the flesh, but do not separate them too much by emphasising them, unless it is necessary."*

* Leonardo da Vinci, *Treatise on Painting*

THE TECHNIQUE OF PAINTING

It cannot, therefore, be urged that the rarity of coloured reflections in old pictures tells against my argument here.

But we need not go so far back in search of instances. Many modern landscapes, only some few years old, record the astonishing phenomenon of a setting sun much darker than the sky around it! The mercury vermilion used has caused this disaster.

Unless the painter is quite sure that he has a genuine cadmium vermilion, he must test his colour carefully, and if it seems suspicious, he must not mix it with white lead. In this case he may use zinc white. Dinet obtained a difference between the two whites in an experimental test. With a good vermilion, the difference is not very great; but when the vermilion is bad, the difference is greatly in favour of zinc white.

The following experiment, described in Blockx' *Compendium*, notes the action of light upon vermilion obtained from mercury:—

"We laid on panels two samples of vermilion ground in oil. We exposed the first to the direct rays of the sun, under glass and protected from mephitic gases, and the second we put away in a tin box, which was ventilated, but into which no light could penetrate. At the end of eight or ten days we noticed that the sample exposed to the action of the light had taken on a superficial grayish tint. A month later it had become almost black, whereas the sample in the metal box had undergone no material alteration."

Madder Carmine.

This red, which is even less permanent than vermilion, is the only indispensable colour which science has hitherto been unable to give us in a durable form.

EVANESCENCE OF MADDERS

Madder does not darken, it disappears. Mixed with white, as we have seen, it is absorbed by it. As a glaze, that is to say, pure, it evaporates quickly; but if the glaze is very thick, or in a scumble, it will last. The under-layer, which does not change, shows through the evaporated but transparent upper layer.

A dual instance of the disappearance of one part and the resistance of the other may be noted in a famous work of Raphael's, the *Madonna of Francis I.* in the Louvre. The drapery over the Virgin's legs is a yellowish white in the lights and a purplish red in the shades. The thorough-going enthusiasm of amateurs and artists is apt to recognise in this a peculiar material with an iridescent effect. They do not understand very well, but they accept and applaud, so much so that in modern pictures these fantastic draperies, which were quite unknown to Raphael, have been devoutly reproduced.

Originally the drapery in question, and other such draperies to be found in the pictures of Raphael and some other painters, were uniformly red. But this red was mixed with white in the high lights. The white absorbed the madders, and in time took on a yellowish tone, due to the oil and to a coat of varnish. In the shadows, on the other hand, where the madder was pure and thick, it has survived.

People often admire and cite the brilliance and the good preservation of the red madders used by the Primitives. These artists, who were always prudent, used them pure, without any admixture of white. Then their triptychs were kept for

THE TECHNIQUE OF PAINTING

centuries in dark churches and chapels, and sometimes under closed shutters. Under such conditions, even comparatively fugitive glazes were able to resist for a long time, because they were never exposed to the devouring action of strong light.

Finally, here again the restorer has sometimes intervened. Madder glazes formed a temptation to which he too often succumbed. The exhibition of French Primitives furnished indisputable proof of this weakness.

Dinet declares that in Memling's *Virgin with a Donor*, in the Louvre, the parts in shadow have the appearance of an ancient madder, due to Memling; but the general glaze which overlies the light parts has no longer the venerable appearance of old madder.

The deterioration of madders mixed with white may be studied in Leonardo's *Monna Lisa*, in the Louvre.* Vasari writes enthusiastically of the freshness of this portrait, the delicate carmines of the lips and cheeks.

I was speaking of this one day to Dagnan. He thinks that Vasari must have exaggerated the brilliance of the carnations. He bases his opinion on the fact that in the process of darkening to such an extent that it has become almost a monochrome, the *Gioconda* would also have lost its modelling if it had once been very fresh and rosy, whereas, on the contrary, the modelling has remained very fine and delicate, passing without any abrupt transitions from the lights to the shadows.

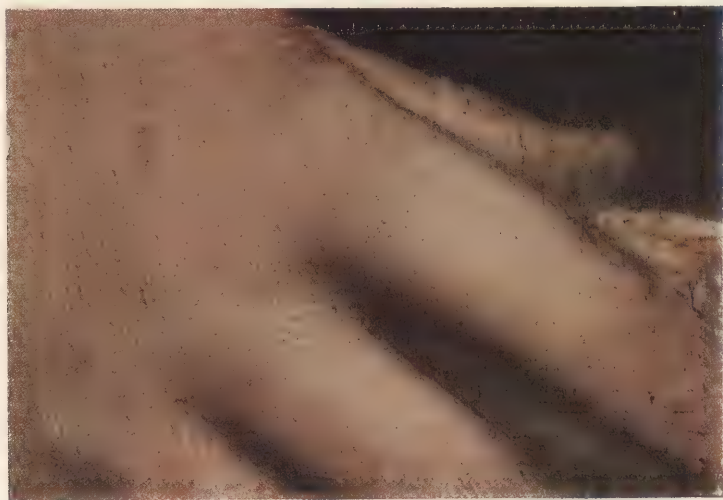
I repeated his remarks to Dinet, who believes

* These lines were written before the lamentable disappearance of the masterpiece in September, 1911.

DETERIORATION OF COLOURS



1. Evaporation of rosy tints due to the use of lake : LA GIOCONDA, by LEONARDO DA VINCI. (Formerly in the Louvre.



2. The rosy tints produced by native earths have lasted. Cracks due to a priming prepared with size. The same picture.



LEONARDO'S MONNA LISA

that Vasari described the picture correctly. As the carmines of the face were due to madders mixed with white, the white has absorbed the madder. The modelling was not affected because it was obtained, not by the intervention of lakes, but by blacks, which, being more durable, have remained, and continue to give the gradations Leonardo desired.

When we had reached this point I put a new question, which I had also put to Dagnan. I asked Dinet if he had not remarked a detail which has not, I think, been pointed out hitherto. It is this: below this colourless face, the hand is still a delicate pink, which seems too rosy by contrast with the face.

Dinet verified my observation, and replied:—

“This is a further confirmation of my opinion. This is what happened. As Leonardo had to paint a fresh complexion, he rendered its rosy tones with madder, which has evaporated in the whites; but when he painted the hand, the tone of which was less fresh and rosy, he used a red ochre, and this more durable colour has remained intact. The fact is that the earths have not changed and the madders have disappeared. And after examining this hand, I shall end by believing, not only that *La Gioconda* was very rosily coloured, but even that the rosiness was exaggerated, which would explain the impression of freshness by which Leonardo's contemporaries were so much struck.”

It may be said that the *Monna Lisa* was brought to France by Leonardo in 1515, and that Vasari, who was born in 1512, never saw it. It may also cause some surprise that Vasari describes her eyebrows, when she has none.

But is it not possible that Vasari repeated a studio tradition, and even that he had seen replicas

THE TECHNIQUE OF PAINTING

of the famous portrait? How could he, himself a painter, have committed such a gross error as to describe the general appearance of a picture inexactly, and to say it was fresh and rosy when it was dark and dull? The detail of the eyebrows would be less surprising. Besides, there is a general opinion, which Dinet mentioned to me without, however, supporting it, that the eyebrows were put in with a light glaze, and disappeared when the picture was cleaned.

In any case, the pallor of the face and the rosy tone of the hands remain inexplicable if we reject the theory of the evaporation of the carnations. Dinet writes to me as follows in this connection:—

“I went back to the Louvre. The want of harmony between the shadows of the nose and cheeks and those of the fingers, which you pointed out to me, is certainly much more pronounced than I thought. Besides, the lips were painted with a lake, the purplish traces of which are still visible. I do not maintain that the *Gioconda* was a very light picture when Leonardo finished it; its tone has been modified only by the not very violent darkening of its varnish. If this varnish were removed, we should nevertheless find the high lights more intense, but on the other hand, some of the shadows and the blacks would be much stronger, and the discord between the pallor of the face and the rosiness of the hands would become insufferable.”*

* In his *Treatise on Painting*, Leonardo gives the following advice, which betrays his tendency to see red in carnations, and his habitual abuse of lake:—

“If you hold your hand up between your eyes and the sun, it will look reddish, and show a kind of luminous transparency.

“Put on the carnations with silk brushes, and while they are fresh you can make the shadows as vaporous as you will. The carnations should be painted with white, lake, and massicot; the shadow should be of black and matoric (massicot), with a little lake and black. When the picture has been sketched in lightly, let it dry, then re-touch it with lake soaked in gum-water, and this should have been left some time in the gum-water, because it is thus better, and will not have any lustre when it is used. To deepen the shadows, take some of the lake already mentioned, soak it in a solution of gum and ink, and with this you can paint the shadows of several colours, for this tint is transparent, and it will serve to paint the shadows of azure, lake,

LEONARDO'S (?) BACCHUS

Other pictures of Leonardo's which I examined in Dinet's company confirmed our opinion.

In *La Belle Ferronnière*, whose vermilion gown we have already discussed, we found a bloodless face, almost monochrome, relieved by the vermilion reflection mentioned above. Here again everything points to an evaporation of the carmines due to the use of madder. Dinet even added: "I had never noticed the lips before. They are so loaded with decomposed lakes that I am convinced they were originally brilliantly red. The reflection, which is still intact, must have seemed almost colourless in comparison."

A curious example of technique is furnished by the seated *Bacchus*, which is apparently not by Leonardo himself, but which was certainly painted on his system by one of his pupils; the figure is of an exaggerated red tone, which seems to have increased in intensity. As the model was a man, whose carnations were darker than those of a woman, the ruddy tone was obtained by the use of an earth which has not disappeared like a madder. Dinet concludes from this that Leonardo and his pupils exaggerated the red tones of flesh.

I find an instructive passage dealing with a modern work of art, in Amaury-Duval's *L'Atelier d'Ingres* :—

"I was fortunate enough to see this portrait* in Mons. Ingres' studio before the opening of the Salon. I remember as

vermilion, and certain other colours of the same kind. I say this, because, on the other hand, the light passages should be shaded with lake, simply mixed with gum, on lake that has not been soaked."

When we read this, it is easy to understand how the *Gioconda* arrived at its present tone. The evaporated lakes have left only the black and yellow under-painting which served for the modelling.

* The *Portrait of Bertin*, in the Louvre.

THE TECHNIQUE OF PAINTING

if I were still before it the strange impression it made on me, and how it took me a few moments to accustom myself to the purplish tone of the picture. I have seen it very often since. I have even made a copy of it, and I now understand a phrase of Mons. Ingres' which puzzled me when he used it: 'Time will finish my works for me.' The portrait has now completely lost the appearance which startled me, for this reason. The lakes Mons. Ingres used are not very durable, the light absorbs them. [Here, we see, Amaury-Duval showed his ignorance of the absorption of lakes by whites, which, as we shall find presently, must have been very considerable in this case.] Oil, on the other hand, turns yellow, and his earlier pictures, which have lost their violet tints and gained a golden tone from the action of time on the oil, have improved, if not actually in colour, at least in their general effect."

Further on, Amaury-Duval writes thus:—

"I saw my copy of Ingres' *Bertin* some time after I had painted it. I found it had darkened. When I painted it, the original had already assumed a darker tone; the violet tint had disappeared; it had got its right effect, or nearly so. To copy what I saw, I had to match the tones of the original, which had already darkened and blackened, so mine had, of course, darkened still more."

I saw Amaury-Duval's copy at the house of Madame Léon Say, Armand Bertin's daughter. This was five or six years ago, and the picture struck me as dark and gloomy. It has continued to darken.

The evaporation of the lakes of which Amaury-Duval speaks is shown in the Louvre portrait by a discord between the cheek in the light, which has become pale, and the cheek in shadow, which, on the contrary, seems to have become stronger in tone, either because the vermilion used has darkened, or because the ground has come through the painting, which is thinner in the shadows.

INGRE ' PORTRAIT OF BERTIN

I showed this picture to Dinet. He was not much struck by the discord between the right and the left cheek. But when I further pointed out to him the exaggerated brilliance of the white cravat, which is not really in harmony with its surroundings ; when, moreover, I showed him in one of the hands a strong light on the little finger, which, with the cravat, is the lightest, and also the most loaded passage in the picture, he began to think that it must have darkened considerably. He believes that Ingres painted on a gray priming. This priming, which he covered too thinly, must have come through everywhere, except in the two places where the impasto is thickest—the cravat and the finger. This explains the discord of the cheeks. The light cheek has devoured the lakes and grown pale, darkening less because of the larger dose of white, whereas the cheek in shadow, with its thinner impasto, has been affected by the priming, and perhaps also by a vermilion, used instead of lake.* As zinc white does not destroy madder, it may be employed for mixtures of madder and white ; unfortunately this white, which dries very slowly, is unpleasant to use.

Dinet gives me this receipt : one-third of vermilion to two-thirds of madder. If madder becomes pale by evaporation, vermilion, on the contrary, darkens under the influence of light ; the brilliance and freshness will diminish, but the value will not suffer.

A red drapery might be painted with vermilion

* I was speaking of this portrait not long ago to Mons. Carolus Duran. He also had noticed the darkening of the cheek in the shadow, but he attributes it more to Ingres' method of painting than to the presence of vermilion. The colour is rubbed on thinly without freedom or solidity.

THE TECHNIQUE OF PAINTING

and glazed with madder. The chemical rays of light will be arrested by the glaze, and will not easily reach the vermilion, which will thus be prevented from darkening.

Bad reds should all be avoided ; even if carefully manufactured, they are still bad.

Yellows.

Yellows owe much to the progress of modern chemistry. Cadmiums and chromes are brilliant yellows, rich and splendid, of which the past knew nothing. Until the beginning of the nineteenth century painters used, for these vivid tints, orpiment or orpine, which the Romans called *auripigmentum* (gold colour), a sulphate of arsenic which will not mix with any colour having a basis of lead, and consequently will not amalgamate with white lead.

However, the durability of our modern yellows must be put to the proof.

TABLE OF YELLOWS.			
VERY DURABLE.	VERY DURABLE, BUT SHOULD BE TESTED.	DURABLE, BUT SHOULD BE TESTED.	TO BE AVOIDED.
Mars yellow	Deep cadmium Middle cadmium Strontian yellow Yellow ochre Aureolin Indian yellow	Naples yellow Ultramarine yellow Lemon yellow Chrome orange Chromate of zinc	Jaune brilliant Light chrome yellow Middle chrome yellow Green Naples yellow Yellow lake Gaude lake Gamboge

YELLOWS

Cadmium.—If well washed, cadmiums are very solid. Dinet assures me they will stand exposure to the sun for eighteen months, even if mixed with white lead. But a badly prepared cadmium darkens. Painters should test them before using them. It is only the light lemon tints, which contain an excess of sulphur, which should be rejected.

Artists should not therefore continue to distrust cadmium, though it is generally distrusted in studios. But it is absolutely necessary to keep it away from Veronese green, or arseniate of copper. The result of contact with this is disastrous; the beautiful brilliance at first obtained fades, the tone turns to positive black, even if the cadmium be excellent. Indeed, all products of copper should be kept from it; and therefore it is prudent not to have dippers with metal covers on the palette when cadmium is being used.

Strontian Yellow.—If well prepared, this is very durable. It takes the place of pale cadmium, and does not affect any other colour, not even Veronese green. But it should be tested, because, if badly prepared, it turns, even when pure, to a greenish tone.

Indian Yellow.—A good colour, durable even when mixed with others. But the alkaline principles it contains form, when combined with oil, a product which is soluble in water. The slightest washing will dissolve it like a soap. Dinet recommends that it should be mixed with a little varnish, and carefully varnished over. Thus protected, it defies damp.

Mars Yellow.—A good colour, and durable. It

THE TECHNIQUE OF PAINTING

does not affect other colours. It is unnecessary to test this, unless there is reason to suspect adulteration.

Yellow Ochre.—Yellow ochre enjoys a reputation for solidity which is not always justified, because it requires very careful washing. If well prepared, and cleansed from all impurities, it becomes absolutely permanent, and does not affect any colour with which it may be mixed. Ingres said: "Yellow ochre is a heaven-sent pigment."

All other yellows are doubtful or bad.

Greens.

Emerald Green.—Emerald green is one of the most beautiful and durable colours which painting owes to modern science. It is unchangeable, both when pure and in mixture, dries well, and can be used thick or as a glaze. Mixed with strontian yellow, it is almost a perfect substitute for Veronese green, the use of which is full of danger.

TABLE OF GREENS.			
VERY DURABLE.	DURABLE, BUT TO BE USED WITH GREAT CARE.	DOUBTFUL, TO BE TESTED.	TO BE AVOIDED.
Emerald green (oxide of hydrated chromium) Chrome green (oxide of chromium)	Veronese green	Cobalt green Malachite green English emerald green (aceto-arsenite of copper)	Terre verte Mineral green Verdigris

BLUES

Chrome Green.—Chrome green, as durable though less brilliant, may be used with advantage as a substitute for terre verte, which is a bad colour. Chrome green is sometimes counterfeited by a mixture of chrome yellow and Prussian blue.

Veronese Green.—Veronese green is suspect. When it is used, everything else must be feared. The smallest trace of sulphur turns it black. Before using it, palettes, brushes and cups should be cleaned with the utmost care. It is, however, capable of certain admixtures; it stands well when mixed with strontian yellow, cobalt, and white lead. It is also quite durable when used pure. It should always be varnished.

Cadmium, vermilion and ultramarine affect it most markedly. Zinc white may also attack it.

Terre Verte.—Terre verte has little body. It is sometimes used for blocking in. The Primitives used it for this purpose, but they painted with egg; used with oil, terre verte causes the colours laid over it to crack. Rubens used it as a glaze on flesh—in his dead Christs, for instance, where it seems to have darkened. Yet Meissonier, whose painting seems very solid, used terre verte, Girardot tells me. I also remember that Dagnan spoke to me one day of a portrait he had blocked in entirely in a monochrome of terre verte.

Blues.

Cobalt Blue.—An excellent colour due to modern chemistry; it will bear all admixtures and all processes, may be used pure, as a glaze, etc.

Mérimée says that in 1802 cobalt blue was discovered by Thénard, whom the Minister of the

THE TECHNIQUE OF PAINTING

Interior, the Comte de Chaptal, had commissioned "to acquaint himself with the requirements of painters and make useful researches bearing on the improvement of colours."

TABLE OF BLUES.			
VERY DURABLE.	DURABLE, BUT TO BE TESTED.	DOUBTFUL.	BAD.
Cobalt blue Cerulean blue Lapis lazuli, or genuine Ultramarine	French Ultramarine	Prussian blue	Indigo (a vegetable colour) Blue verditer Sky blue Antique blue

French Ultramarine.—This must be manufactured with care, for it becomes gray and deteriorates when mixed with white lead, if it contains too much sulphur.

In 1814 some pieces of earthenware from a furnace used for manufacturing soda were brought to Vauquelin. They were coloured a very bright blue resembling ultramarine. The Société d'Encouragement offered a prize of 6,000 francs to the chemist who should succeed in producing an artificial ultramarine similar to that obtained from lazulite or lapis lazuli.

The pieces of pottery brought to Vauquelin encouraged hopes of such a result, and, indeed, Guimet, a former pupil of the Ecole Polytechnique, succeeded in manufacturing the artificial ultramarine which bears his name in France, and is called in England French Ultramarine.

VIOLETS AND BROWNS

Prussian Blue.—Prussian blue is affected by air and light. The air turns it green and the sun robs it of colour. If it has faded in the light, it may regain its intensity if placed in the dark. Ground in oil and varnished, it does not fade so quickly, but also, when it does fade, it is less easy to restore.

The way to make Prussian blue was discovered accidentally in 1704. Mérimée tells the story :—

“The name of this colour comes from the place where a chance led to its discovery. In 1704, a manufacturer of lakes named Diesback, wishing to precipitate a solution of alum to prepare the *white body*, that is to say, the alumina, the base of the lake, which he proposed afterwards to colour with a decoction of cochineal, used some potash given him by Dippel, with which this chemist had made several rectifications of animal oil. To the great astonishment of the manufacturer, the precipitate, which should have been white, was blue.”*

Violets.

TABLE OF VIOLETS.	
VERY DURABLE.	BAD.
Mineral violet Mars violet Cobalt violet	All aniline colours

Browns.

Paul Dubois, in painting his portraits, used a great deal of umber, which he often mixed with lake for his backgrounds.

* Mérimée, *De la Peinture à l'huile*, 1830. Dippel, after hearing of the result, studied the circumstances which had led up to this phenomenon and succeeded in repeating it.

THE TECHNIQUE OF PAINTING

TABLE OF BROWNS.

VERY DURABLE.	DURABLE, BUT SHOULD BE TESTED.	BAD.
Mars brown Cappagh brown Verona brown Burnt Siena Mars orange Transparent brown Vibert brown Sepia (used only in water-colour)	Prussian brown Raw Siena Ochre of ru Golden ochre Brown ochre Raw umber Burnt umber	Bitumen Mummy Bistre Van Dyck brown Brussels brown Cassel earth Cologne earth Brown madder

Cassel earth mixed with white darkens and cracks. It also fades under the action of light.

Mérimée writes:—

“I remember once seeing a head, the brown hair of which had been painted with Cassel earth; after a few years, the light parts, the reflections on the hair, which had been painted with a mixture of white, were darker than the shadows painted in the pure Cassel. The mixture of white had fixed the bituminous earth.”*

Bitumen acts upon whites, upon madder, and upon all the light colours; its oily parts rise to the surface, travel about among the modelling, spread themselves in a brown glaze, and form spots. As it never gets properly hard and is susceptible to heat, it runs. Its evil propensities are not neutralised even when it can be got to dry by means of a siccative. It will not run then, but it will crack, splitting the painting to which it belongs, affecting the layers that cover it, and producing crevasses sometimes several centimetres long. In our chapter

* Mérimée, *De la Peinture à l'huile*, 1830.

PERMANENCY OF MODERN COLOURS

on the history of processes we have seen what disastrous use painters made of it at the beginning of the nineteenth century, and its ravages were described in dealing with the different kinds of cracks.

I have heard Bouguereau assert that bitumen may be safely used, if it is employed only for superficial touches and not in the depths and in underpainting. I could not argue the point frankly with the old artist, or I might have told him, first that he could not say how his bitumen was going to behave in the future,* and above all, that it has given his pictures an empty, vulgar, and viscous appearance, which would be in itself enough to condemn it.

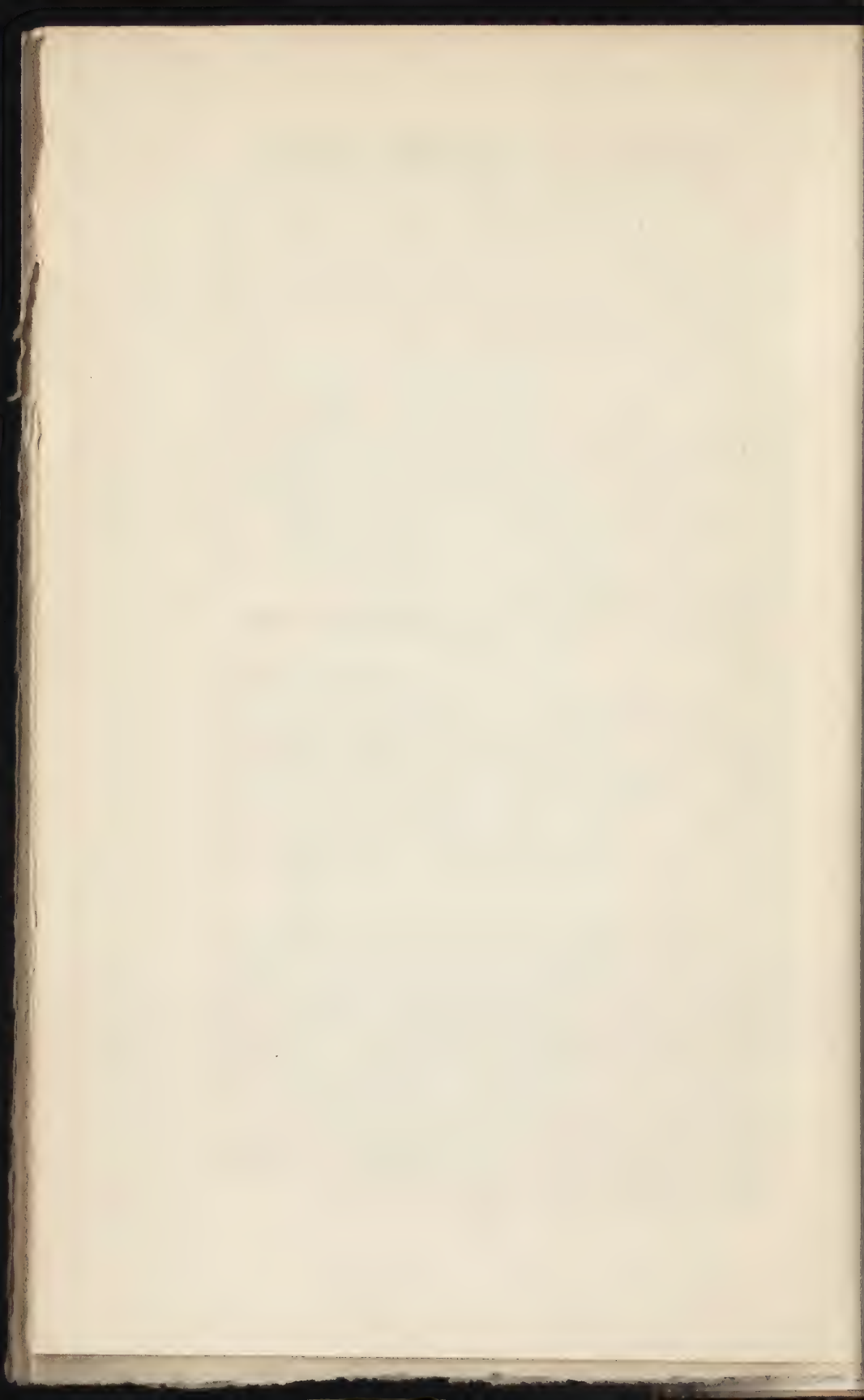
Mummy gives results which are almost as bad.

Blacks.

Ivory black, vine and peach black, and the black of burnt bones can all withstand the action of the light. But as they dry badly, they crack when varnished too soon. It is a good plan to mix a little Courtray (Strong Drying Oil) with them. Girardot considers peach black better than ivory black, which, he says, darkens when mixed with white.

Finally, to sum up, we may say that in the old days, painters possessed but one solid colour, the blue of lapis lazuli, whereas now all the brilliant colours may be so prepared as to be absolutely durable, with the exception of madder. The others, when prepared by a good manufacturer, may be used without fear, and we know now how to test them, if their origin makes us suspicious.

* Used as Bouguereau recommended, there is a danger of its cracking the varnish above it, Dinet tells me.



THE PRESERVATION OF PICTURES

CARE OF PICTURES, RESTORATION, FORGERIES

"The great painters would recoil at the sight of their masterpieces."—*Stendhal*.

Care of Pictures.

The picture is finished and varnished ; it has been executed under the best conditions as regards materials and methods of defence ; it is protected against its enemies. Most people, the painter included, think that they have no further duties to fulfil. It is hung up, and provided they remember to look at it occasionally, and to call upon their friends to admire it, they think they have shown it all necessary attention. It is placed, perhaps, amongst cabinets, furniture, and mirrors, which are dusted and cleaned very frequently. But no care of this kind is bestowed upon the picture. Servants flick the varnish and the frame occasionally with a feather brush or still worse, perhaps, with the duster which has been collecting the dirt of all the furniture in the room. And that is all. This careless dusting is in itself destructive. It makes the surface dirty, and there is danger that the feather brush may scratch it. But the homage of admirers is even more disastrous. Imitating a gesture common in studios, which all amateurs

THE TECHNIQUE OF PAINTING

choose, absurdly enough, to adopt, they point out passages they admire by a little circular sweep of the finger tips; this action, performed close to the picture, very often involves scratches from the finger-nails. Sometimes (and here painters are the worst offenders, for the action has become almost mechanical with many of them) they rub the admired passage with a finger moistened with saliva. They want to make it brilliant. Alas! the permanent effect is just the opposite, though the tone may be heightened for the moment. As out of ten persons, five are probably smokers, this solution of nicotine has the most disastrous effects. The admired passage droops like a child who has been overpowered by caresses. It takes on a blue tint, and bloom appears. If the picture has been admired in this fashion all over, one may imagine the result.

A picture requires constant supervision. It is a mistake to suppose that it is all right as long as it is not actively injured. A thousand dangers threaten it—light, dust, gas, careless and clumsy admirers, heat, cold, damp, darkness, flies, and even too much energy in cleansing, for this is more often the cause of deterioration and damage than anything else.

Like every other creature threatened with illness or accidents, the picture should be the object of preventive measures. A hygiene must be observed, and this hygiene will suffice if it is not instituted too late. We have seen how this is necessary in the case of varnish; it is equally necessary for the whole picture.

The heat of the sun will dry a picture very well,

CARE OF PICTURES

but when it is dry, certain of its colours are adversely affected by the chemical rays of light. A picture should be hung in a moderate light, though not in too dark a place, and it should be sheltered from the direct rays of the sun.

The evils of damp are so much to be dreaded that an inner wall should be chosen. The proximity of a radiator or of a window should be avoided, because the damp outside air and strong heat will both affect the varnish.

Electric light will not harm a picture, but it should never be hung in a room lighted by gas, without the protection of a glass. The products of the combustion of gas contain sulphurous matter. This, which corrodes textiles, book-bindings, etc., is even more disastrous to paint.

A dwelling, of course, cannot be chosen solely with a view to hanging pictures in it, but in building a museum certain precautions are imperative. A site should be chosen which is safe, high, sufficiently remote from the damp of rivers, canals, drains, the emanations of factories and their smoke, and above all, from gas-works. There should be cellars under the building. The walls on which the pictures are hung should be inner walls, with exterior walls at some distance from them, which will prevent the outside temperature from acting upon the inner rooms and the walls assigned to the pictures. There should be no lavatories inside the building. In the galleries, where the floors should be of polished parquet, stoves should not be admitted, because of the dust and the carbonic and sulphurous gases they give out, nor hot-water heating, because of the damp it exhales.

THE TECHNIQUE OF PAINTING

Hot-air pipes should be laid under the floors in the middle of the galleries. A system of ventilation adapted to the height of the rooms, and ensured by ventilators which carry off the damp air due to crowds of visitors, will make it possible to maintain an equal warmth, and also to disperse the dust after cleaning.

The light which falls from the glazed ceiling should filter through ground glass or a white velum.

The galleries must be kept at as even a temperature as possible, for we know how susceptible varnishes are to alternations of heat and damp. To facilitate the regulation of this temperature, there should be a thermometer and a hygrometer in each room. The mean temperature should be in summer from 18° to 22° C. (65° to 72° F.), and in winter from 15° to 18° C. (60° to 65° F.).

The winter temperature must be lower than that of summer because the prolonged heat of a radiator dries the atmosphere and affects panels.

Such minute precautions will not appear excessive in the case of objects so rare, fragile, and precious as fine pictures.

Blockx' *Compendium* makes a very useful suggestion in this connection. It advises that the curators of museums should have the causes of the deterioration of pictures explained to them.

"Even the most indifferent of men," says the author, "becomes attached to the objects amongst which he spends his life. This truth applies to the curators of museums. Devoted and faithful servants, they very often feel a kind of religious reverence for the pictures under their care. By making them understand that their zeal plays a

CARE OF PICTURES

considerable part in the preservation of these masterpieces, we stimulate their self-esteem, and they will take a pride in carrying out the instructions they receive."

The precautions to be taken for the preservation of old pictures may be summed up thus: The painting must be protected from direct contact with the air, and must not be exposed to very strong light.

As to modern pictures, not yet varnished, they must not be deprived either of air or light. The oil requires both until it is perfectly dry, or it will turn sour and rancid and the colour will suffer.

A damp, ill-lighted room will make the oil sour and give the colours a dull, heavy, sticky appearance. We know all this, so I need say no more on this head.

The simplest and most elementary process in the care of pictures consists in wiping them to keep them free from dust.

Once a month, every picture should be dusted with a silk handkerchief, and then gently rubbed with a soft chamois leather, which should be used for nothing else.

If the picture has not yet been varnished, and if a sojourn in some dark, damp place has made it yellow and dirty, it must be washed over with clear rain-water and rubbed with a piece of raw potato to remove the grease; it should then be hung in the open air, or in a very light room, but not exposed to the direct rays of the sun. If the yellowish appearance still persists at the end of a week, it must be washed again with diluted oxygenised

THE TECHNIQUE OF PAINTING

water, then rinsed with rain-water, and wiped with a chamois leather.

If a picture, the varnish of which is intact, but superficially soiled by dust, smoke, and the excretions of flies, has to be cleaned, *eau flamande* may be used. This must be applied with a sponge drawn slowly over the surface. After a few seconds, the picture should be rinsed with another sponge dipped in clear water, which should be carefully changed. It should be wiped with a clean rag, dried in the air, and gently rubbed over with a chamois leather.

If the *eau flamande* is not sufficient—and this is sometimes the case with old pictures—a special soap must be used ; the common soaps are most dangerous. A pure white soap, or one of the medicinal soaps sold by all chemists should be tried, the former for very tenacious stains, the latter for less obstinate disfigurements. Two sponges must again be used ; with one the soap is rubbed lightly on the picture, with the other it is wiped off. Very little water should be used in the second process, or it might soak through the varnish. If possible, therefore, this operation should be performed in the summer, in fine weather and in a place free from dust. The picture must then be wiped with a clean white rag. If it does not dry quickly, too much water has been used. In this case the picture must be placed in a draught for an hour or two. If bloom makes its appearance in spite of these precautions, the surface should be rubbed gently with a chamois leather.

A picture in good condition should be cleaned with *eau flamande* about every two years.

EVIL EFFECTS OF EGG-VARNISH

The use of white of egg, as a temporary varnish or to revive old varnish, though very popular in studios and amongst collectors and photographers, cannot be too strongly condemned.

"We cannot," writes Dinet, "warn artists and collectors too earnestly against the dangers of white of egg, with which many photographers have the disastrous habit of smearing any canvas entrusted to them for reproduction. There is no possible excuse for this practice.

"If the picture is already varnished, this sinister varnish will diminish its transparency, and if the artist has preferred to leave his picture *mat* (without gloss), the operation will bring out spots very injurious to the desired effect.

"But whether the picture is varnished, or is to be varnished later, the after consequences will be fatal and irreparable.

"Albumen is extremely sensitive to damp. If it is not removed, it decomposes the varnish on or under which it may be, causing it to take on a bluish tone, and if attempts are made to take off the albumen, which can never be completely removed, the soapy water used for the purpose will be an additional danger.

"A picture on which there are traces of albumen and soap can never be properly varnished.

"Collectors and artists who entrust their pictures to photographers should make them promise not to apply any of their fatal preparations.

"I have had personal experience of an unhappy picture which came back from a photographer covered with a thick layer of black mess insoluble in water or in spirits of turpentine. Spirit of petroleum was the only thing to which it yielded, after a day's work upon it. But in a few days, the acids of the grease, the nature of which I could never get the photographer to reveal, had attacked the varnish, which I had compounded with the greatest care, a varnish of gum copal which would have resisted rain and sun for two years.

"The catastrophe brought about by another photographer in his treatment of a celebrated tempera picture by Burne-Jones is

THE TECHNIQUE OF PAINTING

familiar to the art-world. He had applied the famous layer of albumen, and when he proceeded to remove it with the equally famous soap and water, he took off all the tempera too, this being soluble in water, and had to pay a heavy sum as compensation. Fortunately for him, Burne-Jones was still alive."*

Let us now take the case of a varnished picture, the colour of which has sunk.

Two causes might produce this effect: either the original varnish was too thinly applied, and in this case it will suffice to re-varnish carefully; or the dull appearance is due to the varnish having perished. If this is the case, it will have acquired a dark-brown tone. To put a second coat over this unhealthy varnish would be dangerous; it would infect the new layer with its disease, and this would decompose in its turn. We are confronted with the necessity of removing the varnish.

The removal of varnish is one of the most serious operations a picture can undergo. Restorers themselves admit this at present; but unfortunately, they were not always of this opinion, and too many imprudent operations have done irreparable damage to master-pieces which will never regain the beauty they possessed, even under their perished varnish.

Lebrun, the husband of Mme. Vigée-Lebrun, knew this, even in his day. He wrote as follows:—

"More pictures are destroyed by cleaning than by any other means; it is unquestionably the most dangerous of operations, because it is undertaken by all and sundry. Some suppose

* Dinet, *Les Fléaux de la Peinture*.

REMOVAL OF OLD VARNISHES

themselves skilful enough to attempt it, and sacrifice master-pieces to their ignorant presumption; others boast of having secrets."

This is what Dinet writes. I cannot do better than quote him at length:—

"A picture has disappeared completely under a dark layer of opaque varnish; large fissures disfigure it in every direction, and even important fragments have scaled off the canvas.

"What is to be done? Should we be content to rely upon our imagination, and attempt to re-construct the master-piece by a mental process, or should we try to lift the heavy veil of varnish and repair the ravages that have disfigured it? These are questions which are hotly debated, and opinions are greatly divided on the subject.

"Some maintain that no profane hand should be allowed to touch either the work of a master or the unhappy modifications wrought by time. Others, that a work famous for its freshness and brilliance ought not to be presented to us veiled by a coating of tar, and that those who profess to admire it in this state cannot be sincere.

"To those who consider the slightest re-touch on the smokiest and most damaged old master a sacrilege, we might say:

"If our ancestors had been so scrupulous, none of the old pictures in our museums would be visible to-day. Certain canvases already invisible in Vasari's time have been restored to the light of modern day, and those which are most admired for their fine preservation have had the varnish removed, have been re-touched more or less skilfully several times, and have been transferred in most cases.

"It is highly instructive to look through the catalogues of the royal collections, which were the nucleus of the Louvre. They give in detail the expenditure in the eighteenth century on the restoration of all the master-pieces we now admire, the cost of ultramarine for glazing Rubens' draperies, etc. . . . We may well ask ourselves how we are to discover something of the individual style of each master under these re-paintings.

"An exaggerated admiration for the dark tone given to pictures by varnish has facilitated the fabrication of 'old' pictures, and the re-painting that dishonours too many master-pieces.

THE TECHNIQUE OF PAINTING

"The crudities of the forger and the inexperienced restorer are easily disguised under a layer of brown varnish, an imitation of the beautiful amber varnishes mellowed by time.

"To those, on the other hand, who hope to bring back the original freshness of a picture, we may say: It is more difficult to remove a varnish without damaging the painting beneath it than it is to skin a living person without making him bleed. The restorer will have to be called in to dress these wounds, and the ravages wrought by time are less disastrous than those caused by the hand of an imprudent physician.

"This is, indeed, the crux of the whole matter. If the varnish could be removed from pictures without damage to them, a feat successfully accomplished in the case of certain Primitive masters whose pictures have an absolutely smooth surface, the question would be a very simple one.

"In spite of our weakness for the amber tone which years produce in certain varnishes, we should not hesitate to have them removed when they became dark.

"This warm patina would not take long to form again, for the perfect age of a picture or a varnish is, in my opinion, from fifty to sixty years. Time has then laid its glamour on it, and has not yet begun its work of destruction.

"Unfortunately, most pictures bear the operation very badly. The glazes are taken off together with the varnishes; the loaded passages are reduced, and in the hollows the decomposed resins, which remain untouched, form black ravines, the more painful to the eye because the half-tones have become lighter.

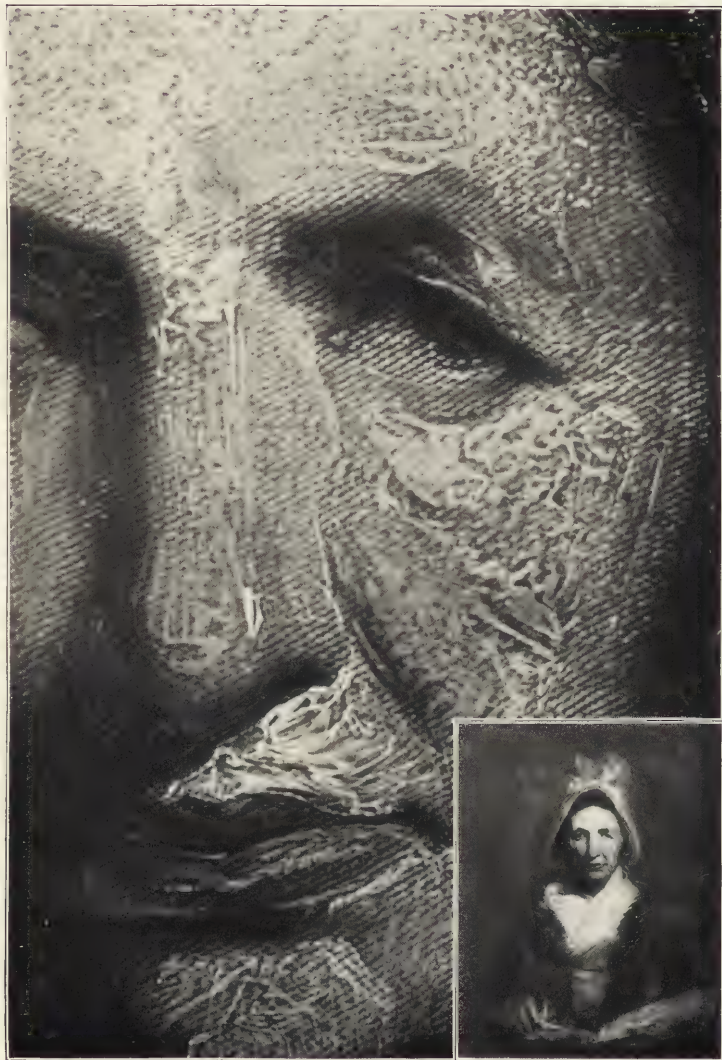
"I may take the case of a portrait by Rembrandt from which the varnish was removed. The nose, which had been painted with a loaded brush, had been rubbed down till it looked like a nose pressed against a window-pane, whereas round the touches which represented the nostrils, black crevices, filled with the resinous dirt it had been impossible to get at, suggested the shadows cast on a face by a cardboard nose.

"Lastly, the rubbing nearly always detaches some pieces of the painting which no longer adhere very firmly to the support.

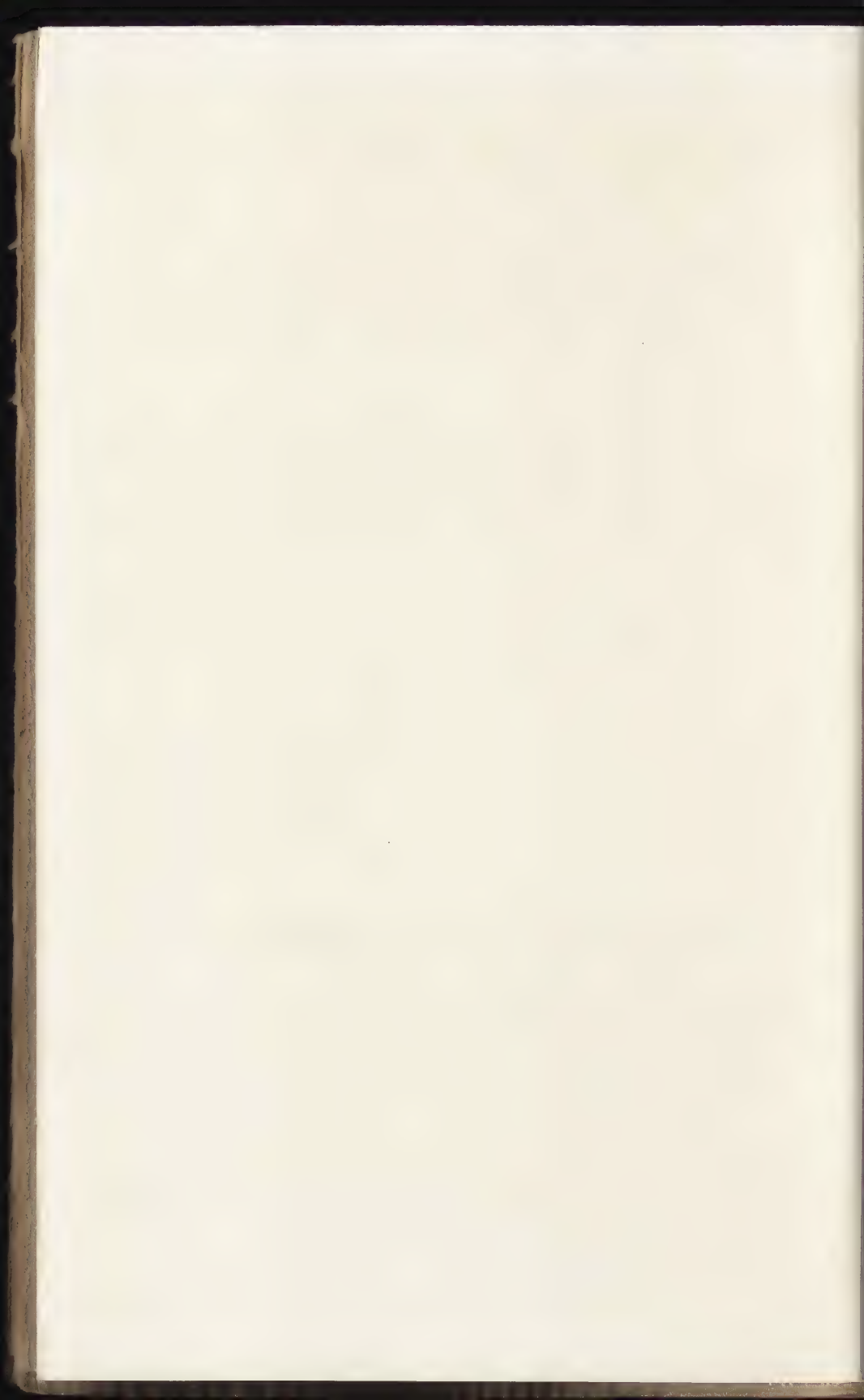
"When the remover of the varnish has done his work, the restorer is a necessary consequence."

But before we go on to the restorer, let us see the remover of varnish at work.

EXTRAVAGANT LOADING OF IMPASTO



Preservation difficult, removal of varnish impossible; THE OLD SERVANT,
by R. P. BONINGTON (*The Louvre.*)



REMOVAL OF VARNISH BY FRICTION

The first method used, the simplest, the most prudent, and the most ancient, is that of reducing the resin to powder by prolonged rubbing of the finger on the varnish. One finger is used at first, then two, or all the fingers, or even the whole hand on a large picture.

The friction is kept up with a circular motion until the varnish whitens and turns to powder. When this powder begins to impede the operation, and prevents the operator from seeing the painting, it is removed. As soon as he feels that the varnish has all crumbled, he stops.

This method of removing varnish can only be practised on smooth, even pictures, painted on copper, panel, or a well-stretched canvas. On a badly stretched canvas, or a picture in which the impasto is full of inequalities, the cavities between the ridges of paint escape from the work of the fingers; recourse must therefore be had to spirits of wine mixed with an equal quantity of spirits of turpentine.

The quantity of turpentine must, however, be modified in proportion to the thickness of the varnish, that is to say, that the proportion of spirits of wine must be greater when the varnish is thicker. Great care must be exercised. On the right of the picture should be a vessel containing the spirits of wine and the essence of turpentine, and on the left, another filled with pure turpentine. A sponge, a wad of cotton-wool, a piece of fine linen, or a mop of tow, if the picture is a very large one, is used to apply the mixture lightly to the varnish. As soon as the operator finds, by touching the varnish with his finger, that it is giving, the biting is checked by

THE TECHNIQUE OF PAINTING

passing cotton-wool dipped in spirit of turpentine over the varnish. When evaporation has taken place, the varnish should be examined, and the operation should be continued if necessary.

The wad used should be carefully examined at intervals, to make sure that the solvent has not attacked the painting.

A mixture of spirits of wine, spirit of turpentine, and oil may also be used. In this case, the action of the solvent may be checked by rubbing lightly with oil.

Generally speaking, it is best to begin with the least delicate parts of a picture, such as dark draperies, accessories, the ground. The sky, the carnations, and faces should be left until it is possible to form an opinion as to the nature of the varnish, and the results to be hoped for.

The operation, as I have said, is fraught with the utmost danger. I give the receipt rather for the information of the curious than to encourage the practice. There are pictures which could not undergo this friction without losing all their charm and all their value. When pictures have been painted in glazes and scumbles, these disappear entirely with the varnish. When attacked by spirits of wine, or even by the finger in the simpler process, they come away with the old varnish to which they adhere. Now as soon as we touch a picture earlier than the school of David, we find ourselves confronted by pictures finished more or less with glazes and scumbles.

As the under layers of a varnish generally deteriorate less than the upper ones, it may sometimes be possible to remove the varnish partially, leaving

REMOVAL OF VARNISH WITH ALCOHOL

a thin skin very evenly laid alike over the loaded passages and over the depressions. This not only preserves the glazes and scumbles, but also the old varnish, the golden tone of which, it must be admitted, is very attractive. People do not always realise how much this contributes to the general effect of an old picture.

Only a restorer could carry out this operation successfully.

But when the varnish has perished, the only remedy is to remove it, for, as we have seen, the disease of the old varnish will communicate itself to the new, and the result of a new layer would be to draw a blacker and thicker veil over the painting.

The removal of varnish with spirits of wine has been effected in various ways.

When Rembrandt's *Night-Watch* was cleaned, the picture was laid over a bath of alcohol, that is to say, on a vast receptacle of the same dimensions as the picture, filled with spirits of wine. The evaporations attacked the varnish, and gradually removed it. But this process does not allow the operator to watch the progress of his work. When he is manipulating the picture, he can stop directly he gets down to the painting, whereas the action of the bath is extended equally over the whole surface, and goes on without allowing the restorer to superintend its progress, and intervene, if necessary.

We are assured that the *Night-Watch*, so far from suffering in the process, has gained immeasurably in brilliance. But has it also retained all the delicate last touches Rembrandt bestowed upon it? This we shall never know, and everything would

THE TECHNIQUE OF PAINTING

lead to the conclusion that it has not. Hence, in France, the removal of varnish by the means described finds little favour.

Mons. Durandean, the restorer attached to the Palace of Versailles, has invented an apparatus, the excellent effects of which I have myself witnessed. It should prove of the greatest service in these operations.

This apparatus enables the operator to preserve the patina of old pictures ; it restores varnishes that have bloomed or cracked, and fills up cracks, making them disappear entirely. The advantages, as we see, are considerable.

Pictures entrusted to Mons. Durandean run no risk of losing glazes, loaded passages, or patina. I have seen pictures before and after the operation. The results were amazing.

Mons. Durandean and Mons. Nolhac, the Director of the Museum of Versailles, also allowed me to photograph an example of a disintegrated varnish which was restored in less than an hour ; the photographer took longer over his work than the restorer.

This process offers, as far as varnish is concerned, the most normal solution—that of preserving the picture as the artist painted it, and as time has completed it.

Finally, we have to consider the case of a dirty varnish buried under additional coats of varnish. The dirt that is imprisoned between the affected layers of varnish demands their removal. But even in circumstances of this kind Mons. Durandean is of opinion that the lower layer of varnish should be respected, or at least the last skin of this varnish,

WAX AS A VARNISH

the one in contact with the painting. His invention enables him to restore the health of this first varnish, and to give it a fresh coat if the stratum that remains seems too thin.

Taking into account the damage caused by the protecting varnish, we may be inclined to ask if it would not be better to renounce such doubtful protection altogether. But this would be a serious mistake. Certain colours which are perfectly solid under varnish deteriorate hopelessly under direct contact with the air and the action of its gases.

But would it not be possible to find some protection other than a resinous varnish? Attempts have been made to find a substitute, but without success. The only one still in use, white of egg, is inefficient, and has the most serious disadvantages. As we know, it absorbs the moisture in the air; in dry weather it contracts and causes the painting to split. It lacks the good qualities of resinous varnishes, and has defects even more serious.

Wax is the only material which has always been found to protect painting so efficiently as to make it in some ways preferable to resinous varnishes.

If a thin layer of wax is spread over an oil painting, it gives it the dull appearance of distemper; but if we rub the surface lightly with a wad of cotton-wool, it assumes the brilliance of a varnish. It never causes the painting to crack, and it preserves it better than resins, for it is unaffected by acids. Finally, although it yellows a little in time, this change is imperceptible, whereas the darkening of resins ends by making the picture invisible.

Paintings executed with wax in Egypt, Greece, and Italy have come down to us so fresh that they

THE TECHNIQUE OF PAINTING

look as if they had been painted yesterday. This phenomenon has been duly noted, and at all periods efforts have been made to revive its use and to discover the exact methods used by the ancients. We have seen that the Comte de Caylus undertook a long course of study to inquire into the process, and that Baron von Taubenheim mixed wax with ordinary oil-colours. This facilitated execution, but as wax will not amalgamate with oil, the adhesion of the various coats of colour was not perfect. One of Taubenheim's pupils conceived the idea of laying a coat of the wax prepared by his master over an old picture which had sunk and was beginning to decay. He was astonished at the result. "The wax," he said, "replaced the 'saps' of the painting, which had disappeared in the process of desiccation," and restored the original suppleness and transparency of the picture.

Dinet says that if this kind of protection had been applied from the first beginnings of oil-painting, or even from the eighteenth century, at the time of Taubenheim's experiments, many pictures by the old masters would have been saved, which are now almost entirely painted over by restorers; we should have been able to admire them almost as they left the hands of their authors. We shall see presently why.

A distinguished restorer, Mons. Albert Jehn, convinced of the services wax might render, has lately compounded, with the help of certain new solvents, a series of wax preparations which enable the restoration of pictures to be carried out to perfection, and their future preservation to be ensured.

All the cleaning processes now adopted destroy the few "saps" that remain in the colour, and

WAX AS A VARNISH

replace them by superficial resinous varnish, which renders it more brittle than before. The new process, on the other hand, introduces into the pores of the paint a supple and transparent "sap" much more durable than the oil which has perished, carbonised, or disappeared; this is wax. It even has the further quality of protecting the patina, when it is desirable to retain this, for it penetrates the usual varnishes, those which are prepared neither with spirits of wine nor shellac—both deleterious, as we have seen—and restores a certain elasticity to them also. Finally—and this is a truly remarkable advantage—the high tones regain their brilliance in an extraordinary manner, and colours which have disappeared for reasons other than their susceptibility to the action of light, colours which the removal of dirt and varnish has failed to revive, re-appear in all their pristine freshness. As the wax penetrates into the cavities left by the retreat of the oil, the light acts upon the colouring powder just as when the painting was new. Mons. Jehn give a scientific explanation of this phenomenon which seems plausible, and he is to make it the subject of a communication to the Académie des Sciences.

The results obtained by Mons. Jehn are indisputable, and his process should do much to facilitate the preservation of pictures. As he intends to offer his invention to the public, it may be useful to sum up the advantages of this new product.

1. As wax dissolves all dirt, and is afterwards easily removed together with this, it will be possible to clean the roughest and most loaded impasto without rubbing it smooth. This in particular

THE TECHNIQUE OF PAINTING

should prove the salvation of our Impressionist school. Its bristling impasto seemed to doom it to early destruction. It would have been impossible to clean these pictures or to remove their varnish, and, if they had been left unvarnished, they would, as we have seen, have been defenceless against the injurious elements of the atmosphere.

2. It will be possible to clean a picture and give it back its freshness and suppleness without removing the patina, provided that all the varnish is resinous.

3. The painting may be perfectly preserved by the use of this wax, which, when lightly applied, produces the effect of a varnish more agreeable than resinous varnishes with their viscous quality. The paint will remain supple and will preserve its brilliance ; a slight friction will suffice to revive the varnish if it becomes dim. Egyptian paintings over 2,000 years old survive to attest this.

4. There will no longer be any reason to fear the bloom arising from resinous varnish, which, as we have seen, works such havoc.

5. If the artist wishes to use a resinous varnish because of the golden patina it produces, this wax, laid over it, will give it elasticity, and prevent it from cracking the colour beneath ; it will also prevent the resinous varnish itself from cracking.

6. Finally, re-touches with oil paint will not adhere to a picture thus treated, so, if this process became general, restorers could no longer repaint entire passages and figures, as they have hitherto taken upon themselves to do.*

* The audacities of the restorer are chiefly directed to the faces in a picture. He repaints hands less freely ; draperies even less frequently, and backgrounds are often left intact. His interference is unfortunately in a direct ratio to the value and interest of the various parts of a picture.

REPAIRING PICTURES

Mons. Albert Jehn's products will thus offer advantages as precious to modern as to old pictures, and their chief ingredient, wax, has given so many proofs of durability from antiquity onwards that we have all necessary guarantees for the future in favour of this process.

Repair of Accidents.

Pictures do not suffer from their varnish only; they also run risks of deterioration due to the material on which they are painted.

Canvas is the most usual, but also the most fragile of foundations. In spite of all the care bestowed upon it, it is liable to accidents of every kind and degree.

The simplest are easy to repair, and artists can do this themselves.

The commonest of these minor disasters are protuberances, blisters, and fissures.

Protuberances.

Take a sponge dipped in lukewarm water and wet the back of the canvas where it protrudes. Then leave it to dry in a moderate temperature.

Blisters or Bubbles.

Begin by putting petroleum oil mixed with spirits of petroleum in equal portions upon the blister to soften it. Then prick it with a needle, and introduce some picture varnish into the hole made by the needle. A drop-measure may be used for the purpose. Then press the blister gently with a rag to squeeze out any excess of varnish, and put the canvas under a weight, after placing a

THE TECHNIQUE OF PAINTING

piece of zinc or glass with perfectly smooth edges over the blister. It is wise to slip a paper smeared with paste between the blister and the glass, in case the varnish from the blister should stick to the glass itself. If this should happen to the paper, it could easily be sponged off with a little tepid water.

Torn Canvases.

The simplest process is to put the torn canvas flat on a table—with the painting turned to the table—and to plaster the rent with several pieces of gauze pasted one over the other or a single piece of pasted canvas. In both cases, the paste should be made of a thin layer of white lead mixed with enough oil to make it viscous. A weight of some kind should be kept on the plaster for a day or two.

Very often wax is used instead of white lead and oil. The patch will show less on the back of the canvas if it is so cut as to be very little larger than the rent itself, and frayed out unequally at the edges. An iron heated slightly in boiling water should be used to soften the painting a little, and the two edges of the wound should be pressed together before the operation.

After having applied the patch smeared with a thin coating of wax, the iron should again be applied, but cold this time, and the canvas should be pressed for twenty-four hours.

Some experts, Vibert among others, disapprove of the use of wax. They think it susceptible to damp (it appears that these patches often rot); they also say that it will not hold a re-touch. And as the wax passes through the rent to the surface

TORN CANVASES

of the picture, the colour will not adhere when the operator tries to conceal the join.

To counteract this defect, Vibert proposes first to apply a layer of caseine and zinc white, which will prevent the wax from passing through the canvas, and secondly, to melt damar resin in equal quantities with the wax in a *bain-marie*. But he prefers an application of caseine paste to either of these two methods. It should be laid on the fissure in the canvas and a sheet of thin paper should be fitted over it. When the paper is dry, a piece of fine canvas, smaller than the paper, should be pasted over it. The repair should be flattened with a warm iron, and should then receive several coats of the varnish used for re-touching.

This pasting process is not, however, universally approved. There are persons who think that it draws the canvas, and that it gradually forms a protuberance upon the picture.

When the tear has left a void, a more delicate operation, which forms an invisible repair, may be performed. The outline of the wound should be traced with a pencil on a canvas of the same texture as the damaged canvas. The piece must then be cut out with a pair of sharp scissors, following the traced line, in such a manner that it will fit exactly into the hole in the canvas. After laying the picture on a table, the ends of the threads of the torn canvas and the edges of the patch must be touched with size, and the latter must then be fitted into the void. A wet brush is drawn over the line of junction, and then a spatula, slightly warmed. The warmth dissolves the size. A warm iron may then be laid upon the spot and left for a day.

THE TECHNIQUE OF PAINTING

To stop up the joins of a repair and to get a smooth coating which conceals any trace of the operation, a compound of size and Spanish white should be used. (Caseine is dangerous, although Vibert recommends its use.) Another recipe frequently used consists of a mixture of damar resin and of some colour in powder, the tint to be determined by circumstances. The whole is ground into a liquid paste with water-colour fixative.

These coatings are laid on smoothly so as to conceal the joins. When the repair has been carried out on a canvas the grain of which is apparent, a piece of the same canvas may be laid on the paste before it hardens, and it should be firmly pressed till it leaves the impression of the texture. This will mask the solution of continuity.

But there are certain accidents which cannot be repaired by means of a patch. In general, when the gash requires a plaster more than 10 centimetres in extent at its greatest length, it is better to line the canvas throughout. Otherwise, the large patch added under the canvas will bubble, and form either a hollow or a swelling.

Lining may also be necessary when a canvas is so worn at the edges that it will not hold to the stretcher, and finally, when the paint scales and blisters in parts, without rising all over the picture, and the canvas, though old and discoloured, is still sound.

Lining and Transferring.

To line a picture means to put a new canvas behind the old one. Artists and amateurs should call in an expert for this delicate operation, and not

LINING

attempt it themselves, except in the case of canvases of little value.

The old canvas should be removed from the stretcher and laid flat upon a table, the painted side upwards. If the canvas has been fixed to the stretcher by a margin without any priming, this margin may be cut away; but if it has been stretched and nailed with the priming, and even painting, on the edges, these must be smoothed out with an iron, a piece of paper or felt being interposed between the canvas and the iron. When the canvas is perfectly flat it must be covered entirely with a sheet of paper brushed over with size or paste.

When the paper is quite dry the canvas is turned over and laid on the table face downwards. The back of the canvas is rubbed over with pumice-stone to equalise the surface, which is then entirely covered with a thin coat of glue. All that now remains to be done is to apply the new canvas, which has previously been covered with glue in the same manner. A warm iron is then passed very carefully over the back and over the front of the picture. This melts the gelatine in the glue, and causes the scales of paint on the surface of the picture to re-adhere; on the back it expels the air and any superfluous glue, makes the two canvases adhere firmly and prevents the appearance of bubbles. The double canvas is then stretched in the usual way.

The benefits of this ironing process are often purchased at the price of several disadvantages. It is said to submit the paint and the priming to a prolonged damping, and to introduce into the paint an element susceptible to damp, which

THE TECHNIQUE OF PAINTING

may do infinite harm by fermentation. The operation is considered very delicate, even by restorers, who only perform it in cases of absolute necessity.

The transference of a picture from one canvas to another is an operation still more delicate. This process was invented in the seventeenth century by a Frenchman called Picault. It is adopted when the original canvas is absolutely rotten, or when the paint is peeling off the entire surface.

The first steps taken are similar to those of re-lining; after having laid a coat of paste over the face of the picture, a thin sheet of coloured paper is applied to it; in the case of a valuable picture, a sheet of gauze is preferable; this will allow the air to escape, and will adhere better to the paint. The coloured paper or gauze enables the operator to see—after the removal of the layers which eventually strengthen it—how near he is getting to the surface of the picture when he is scraping off the superimposed sheets. As soon as the coloured paper or the gauze is visible, he knows he is approaching the painting.

After allowing this first covering to dry for forty-eight hours, it is overlaid by a series of papers pasted one upon the other till they form a kind of cardboard strong enough to support the painting. The picture is then turned over, removed from its stretcher, and fixed flat upon the table, face downwards. The canvas is slightly moistened with a wet sponge; if necessary, a wet cloth is spread over it to maintain the moisture. If the canvas was sized before it was primed the size yields, and the old canvas comes away easily. In this case the painting is left to dry, and the next day the new

TRANSFERRING PICTURES

canvas is applied by the same process as that used in re-lining.

But if there was no size the canvas resists and the operation becomes more difficult. The canvas must be rubbed away with pumice-stone or with a file until it is entirely removed.

If the painting was executed on cardboard or panel, a stronger padding of paper will be required to support it during the operation.

This padding is well soaked and then removed by friction with the fingers or by a scraper.

When the picture is on panel the repairs are more or less important in proportion to the injuries received by the painting itself.

If the panel is in good condition, and if the painting alone has suffered from damp, which has detached it from its support in places, hot size is poured upon the damaged place. It penetrates beneath the scales and congeals. A sheet of paper with a very thin coating of paste is laid over it, and when this is dry a hot iron is applied. It melts the size, which spreads under the scales and re-fixes them to the panel.

When the panel is warped, it must be damped and put into a press, after which it must be cradled. This process is described on p. 113. A split panel must also be cradled.

But there are cases in which the panel is rotten. It must be destroyed, and the painting must be transferred to canvas. A certain number of the pictures in the Louvre have undergone this process: Rubens' *Virgin with Angels*, in which we still see traces of the fissures in the panel, Raphael's *Saint Michael*, etc.

THE TECHNIQUE OF PAINTING

The operator begins, as in a transfer from canvas, by overlaying the painting with a gauze and a stout padding of sheets of paper pasted one over the other. The panel is then removed, first by sawing it away in small squares, then by working on it successively with a chisel, a plane, and finally a file. After having got rid of the panel, the operator removes the priming, which in the pictures of the Primitives is always cracked and defective. The transfer is effected in the same manner as from canvas.

There is a document in existence which describes in detail the transfer of a picture by Raphael at the beginning of the nineteenth century. Passavant writes as follows of this famous restoration: "Lovers of art owe an incalculable debt of gratitude to France, who may claim the proud distinction of having saved many master-pieces of painting, when these were sent to Paris as a result of the compacts which the fortune of war dictated during the Italian campaign."

Installed in the depths of churches or of damp chapels, the majority of these pictures were already in a lamentable state when, removed by inexperienced hands and transported under disastrous conditions, they arrived at the Louvre as trophies of victory.

The Institut appointed a Commission to deal with them, and a very capable restorer, named Hacquin, successfully transferred several of the pictures. It was considered too great a risk to move the *Transfiguration* to Paris; it was transferred at Rome. When Titian's *Death of Peter Martyr* was brought from Venice, the injuries it had received during the

TRANSFER OF THE MADONNA DI FOLIGNO

journey made it necessary to apply the same remedy. During the voyage on the frigate *La Favorite*, the case containing the picture was flooded with seawater; the wet caused the panel to swell, and the paint was detached from the support. The case was put to dry in the sun after landing, and the paint began to scale off in every direction. It was decided that the transfer of the picture was urgently necessary.

I transcribe a document which is interesting both historically and as a description of the actual transfer of a picture from panel to canvas. It is the official account of the Commission which superintended the transfer and restoration of Raphael's *Madonna di Foligno*:—

Transfer of a Picture by Raphael, the Madonna di Foligno; extract from the Report of the Commissioners.

“When this picture was brought in at Foligno, it was in such a state that the art commissioners in Italy hesitated as to whether they should send it to Paris or not; they did not make up their minds to order its dispatch until several places where the painting was scaling from the panel had been patched by pasting strips of gauze over them. In addition to this disfigurement, the panel of white wood, om. 032 thick, on which the picture was painted, had a crack om. 010 wide at the upper end, which ran down from the centre, diminishing gradually in width, to the feet of the Infant Jesus; from this fracture to the right edge the surface formed a curve of om. 067 at its greatest arc; and from the fracture to the other edge, another line with an arc of om. 054. A large number of scales had already fallen off, and in addition, the picture was worm-eaten in several places.

“The salvation of this precious picture from the ruin that threatened it was therefore of the utmost urgency, and the Government decided to have it transferred, being convinced that this was the only way of saving the picture. But as an operation of such importance, especially when performed on a picture of Raphael's, is only to be undertaken with a

THE TECHNIQUE OF PAINTING

religious respect, the Minister of the Interior was desired to request the Institut National to nominate a Commission from among its members, who were to superintend the proposed restoration and make a report on it, to the end that the timid might be reassured and the ill-disposed silenced, and further, that the simple operations in question might be made public, and the quackery and trickery heretofore connected with them might be banished.

"The Commissioners appointed were the Citizens Guiton and Bertholet, chemists, and the Citizens Vincent and Taunay, painters. They agreed with the Government as to the urgent necessity of transferring the picture.

"The following is an account of the operations they carried out :—

"The first thing to be done was to make the surface even. To accomplish this, a gauze was pasted over the painting, and the picture was turned on its face ; Citizen Hacquin then cut little hollows in the wood at intervals from the arched top of the picture to the part where the panel became straighter ; into these hollows he introduced small wedges of wood : he then covered the entire panel with wet cloths, which he kept renewing ; the pressure of the wedges, which swelled with the damp, against the softened wood, forced this back into shape ; the two edges of the crack were brought together ; the restorer introduced glue to unite the two divided parts, and he applied transverse oak battens to hold the picture in position as it dried. When this process had been slowly accomplished, he laid a second gauze over the first, and then two successive layers of porous brown paper.

"When these in their turn had dried, he turned the picture over on a table, on which he fixed it carefully ; he then proceeded to remove the panel on which the picture was painted.

"The first part of this process was carried out with two saws, one working perpendicularly, the other horizontally ; when the saws had done their part, the panel was reduced to one-tenth of a centimetre in thickness ; the operator then used a plane of a convex shape across the panel, working obliquely, to avoid the grain of the wood, and to remove only very short shavings ; by this means he reduced the panel to the two-hundredth part of a centimetre ; he then took a flat plane with a toothed blade, the action of which brought away the wood in a

TRANSFER OF THE MADONNA DI FOLIGNO

powder ; with this he reduced the panel to the thickness of a sheet of paper.

"In this state the wood was repeatedly wetted in small compartments with pure water, which softened it ; he then separated it from the paint with the rounded blade of a knife.

"When the citizen Hacquin had removed all the priming on which the picture was painted, and above all, the adhesives necessitated by former restorations, he laid bare Raphael's first design on the panel.

"To give a little elasticity to the paint which time had dried to excess, he rubbed it over with cotton-wool dipped in oil and wiped it with some old muslin ; then, a coat of white lead ground in oil was applied with a soft brush as a substitute for the priming. Three months were allowed for drying, and then a gauze was laid down upon the oil priming, and over this, a fine canvas. When this canvas was dry, the picture was unscrewed from the table, and turned face upwards ; the layers of paper and gauze were removed with water, and when this was done, the operator proceeded to deal with the inequalities of the surface, caused by the wrinkling of certain parts. For this purpose, he applied thin paste to the inequalities ; then, laying an oiled paper over the moistened surface, he pressed a warm iron on the wrinkles, which disappeared ; but he did not venture to apply the iron to the picture till he had satisfied himself by various tests of the exact degree of heat suitable for the purpose.

"We have seen that the painting, freed from its size, priming, and all foreign substances, had been fixed on a new priming mixed with oil, and that the surface wrinkles had been smoothed out ; the master-piece had still to be fixed firmly on a new foundation ; for this, it had to be pasted over with papers again, the temporary gauze which had been pasted over the priming had to be removed, and a new coating of white lead and oil to be applied ; a very flexible gauze also coated with the preparation was laid over this, and then an unbleached canvas woven for the purpose, and impregnated on the outer surface with a resinous mixture designed to fix it to a similar canvas already fastened to the stretcher. This last operation required that the picture, released from its provisional coverings and provided with a new foundation, should be applied with the utmost precision to the canvas coated with resinous

THE TECHNIQUE OF PAINTING

substances; all accidents that might have arisen from unequal or over-violent straining of the picture had to be avoided, and yet every portion of the vast canvas had to be made to adhere firmly to the canvas already on the stretcher. By means of these elaborate processes the picture was ultimately incorporated with a basis more durable than the original one, and safeguarded against accidents such as those which had caused its deterioration. It was then handed over to the restorer."

The details of the restoration carried out by "Citizen Roeser" are of no particular interest.

Cases sometimes occur in which a painting on a wall has to be removed. This operation presents difficulties of a new kind. A stout protection of pasted paper is applied on the method already described; the wall is then cut into deeply all round the painting, and the plaster which supports the colour is detached with a chisel. As this plaster comes away from the wall it is rolled on a cylinder with the colour which adheres to it. All the operator then has to do is to remove the cement with a chisel.

If the painting has been applied to a wall, not on a ground of plaster, but merely on a priming, it must be detached by the help of a toothed chisel, which saws through the stone just beneath the colour, this being held together by the temporary padding pasted on its surface. Sometimes a scaffolding is built up in front of the painting to reinforce the support, and the wall is destroyed.

Sometimes the conditions are such as to bid defiance to all recognised methods and invite novel experiments.

Corot painted two sketches on the unprepared wall of a little house at Sauvigny (Côte d'Or). These paintings measured 1 m. 10 x 90 centimetres each.

REMOVAL OF WALL-PAINTINGS

As they were suffering from the damp, Mons. Cirot, a retired barrister, who had come into possession of this property, applied to Messrs. Brisson, picture-restorers, and entrusted the paintings to their care. The operation was a very delicate one. Not only was the painting very slight in parts, but there were also passages where the plaster of the wall had been left untouched and played its part in the composition. Before applying the pasted paper, Messrs. Brisson varnished it very heavily, on account of these unpainted passages. It was a device both ingenious and prudent, which served to protect the layers of paper during the destruction of the foundation. The wall was then cut into deeply all round the pictures. A stout panel was fixed over each *cartonnage*, and, when the painting had been thus firmly secured, the plaster of the wall was sawed through behind it.

When detached it was provided with another panel at the back, and the two Corots were conveyed to Paris, each between its two panels. The total weight was about 800 pounds.

In Paris, where the operation had been much discussed, and had greatly interested artists, Messrs. Brisson completed their work, scraping away the plaster from the pictures, and replacing it by canvas. They then had only to remove the sustaining panel and the pasted papers (*cartonnage*).

These two pictures, which would have disappeared but for the skill and ingenuity of those who undertook to preserve them, are now certainly worth over 100,000 francs (£4,000) each.

A similar operation had been previously carried out by Mons. Chapay in the case of six Corots at Ville d'Avray, in a pavilion belonging to the

THE TECHNIQUE OF PAINTING

publisher, Mons. Lemerre. In this instance the difficulties were aggravated by the fact that the wall was slightly concave.

Restoration.

Paintings suffer not only from defects in their varnishes and their foundations, but also from intrinsic blemishes; they are liable to split, crack, blister and scale. Colours become dull and powdery, they bloom and stain. When the foundation splits if it is a panel, or rots if it is a canvas, the colour itself is disturbed.

We have seen how to repair varnishes and foundations, if they alone are attacked. But if the painting itself is damaged, either independently or by defects in the foundation, this too must be repaired.

Many severe things have been said about restoration. Delacroix wrote as follows in his Journal:—

Every so-called restoration is an outrage a thousand times more lamentable than any ravage wrought by time; it is not the picture which comes back to us, but a new one, the work of the miserable dauber who has replaced the author of the original work, which has disappeared under his brush."

These words are severe, and perhaps exaggerated. What is to be done then with a picture which has been lined or transferred after scaling? We may admire an architectural ruin, for in spite of its decay it still has a certain unity. It is not the same thing in the case of a picture covered with cracks, whose ground is coming through, and not only injures the general appearance of the picture, but opens a passage to damp, air, gases, and all the other agents of destruction beneath the parts of the picture that are still intact.

DETERIORATION AND RESTORATION



1. Lakes destroyed by whites, but intact in the shadows : HOLY FAMILY OF FRANCIS I, by RAPHAEL. (*The Louvre.*)



2. Restorer's re-touches, which now appear as spots on the skin : CRUCIFIXION, by A. SOLARIO. (*The Louvre.*)



RE-TOUCHING

Dinet, in his *Fléaux de la Peinture*, has written a passage so instinct with sound judgment, experience, and independence of mind tempered by a spirit of conciliation that I cannot do better than lay it before the reader:—

“Far be it from me to enter upon a campaign against picture-restorers. No one can admire more than I do the prodigies of skill, patience and taste, performed by some of them; paintings detached from damp walls or rotting panels and transferred to sound canvases, re-paintings executed by barbarous hands removed with such dexterity as to bring to light again the original work of the master in perfect condition, etc. . . .

“They deserve a full measure of gratitude and congratulation for these things.

“But their delicate and difficult function may become a disastrous one unless it is strictly delimited.

“After re-lining a picture and removing an old varnish they have often to fill up cracks or voids left by the scaling off of portions of the paint, and it is in this operation that they have too often incurred well-deserved censure.

“The fact is that in this operation, which may seem so simple to the public when compared with re-lining and removing a varnish, they are confronted with an insuperable difficulty.

“The paint with which they fill up a crack ought to contain as much oil and varnish as that which surrounds it, if it is to blend with this and present the same appearance.

“Now all colour sufficiently saturated with oil and varnish darkens after a time, until it is absolutely dry.

“A re-touch made with the utmost precision on a picture, the perfectly dry colours of which will not darken any more, will not harmonise with these when it has undergone the inevitable process of darkening.* It is very difficult even for the artist himself to resume work on a picture which has been laid aside for some time. Restorers know this very well, and

* In Andrea Solario's *Crucifixion*, the arm and shoulder of the soldier throwing the dice seem to have been disfigured by some horrible skin disease. These spots, so offensive to the eye, are the result of early re-touches which have darkened.

THE TECHNIQUE OF PAINTING

as they might be accused of bungling their harmony from defective perception, they re-paint the whole passage, so that the re-touch shall not become discordant.

"But would not anything be preferable to so monstrous a profanation?

"Imagine the effect of a head by Titian entirely re-painted by a person evidently very skilful, but hardly equal to his heroic task.

"Unhappily, there are too many instances of such exploits. And think of the facilities such a practice offers to the forgers who fabricate old pictures!

"At a recent sale there was a picture by a Flemish Primitive in which a single piece of crimson drapery, overlooked by the restorer, revealed by the contrast it presented, the re-painting of all the rest of the picture.

"There was also a Ruysdael, loaded with a modern repaint to which a look of age had been given by means of a glaze of ivory black; the cold tone of this was a clumsy counterfeit of the brown veil of an ancient varnish; it stamped the superficial paint we could see as a product of the last few years.

"Was there a real Ruysdael concealed underneath? This we shall never know. What difference is there between a genuine picture worked over in this fashion, and forgeries pure and simple?

"We see by these examples, which we might multiply indefinitely, that if the partisans of restoration are sometimes right, the opponents of the operation are still more often justified. . . ."

We see how much conscientiousness, labour, delicacy, and knowledge are required for the material restoration of a picture. One of the most essential qualities in an artist who undertakes such a task is a keen perception of tone. Unless he is capable of seeing and reproducing a tone exactly, every re-touch will stand out and will exaggerate the evil instead of removing it. He requires great experience in the art of painting, for he has to reproduce all kinds of ancient manners and

GOOD RESTORER'S EQUIPMENT

processes, and it is necessary for him to discern them before he can reproduce them. Now a modern painter, even when very skilful, is dominated by his personality and his manner. In the restorer, knowledge and self-effacement are equally essential. He must assimilate the style of his original and be familiar with its methods. Our modern manner of painting heavily with a loaded brush tends to an exclusive and restricted technique, which ignores all the resources of glazes and scumblings. A restorer requires to have a more thorough knowledge of technique than the best of our contemporary masters; if not, he would be incapable of reconstructing a handling earlier than that of David. He must further possess a quality very rare in our days, universality of *genre*; he must be capable of executing landscape and figures, interiors and open-air subjects; before any given subject he must feel himself on familiar ground, and equipped to repair ravages of any and every kind.

Modern pictures require great prudence in the repairer, because the impasto is still soft, though the varnish is already dry; and as they have always been varnished too soon, the varnish which has penetrated the colour has become incorporated with it.

In old pictures there are sometimes ancient re-paints and restorations. As they never adhere to the original painting, directly the varnish is removed, they are revealed as spots on the modelling, and are to be recognised by their dirty yellow appearance. They may be removed with a scraper, but this is an operation requiring great experience; it is easier to soften them first with cotton-wool dipped in spirits of wine and oil.

THE TECHNIQUE OF PAINTING

Fly stains may be removed from a varnished surface with the scraper, but it is difficult to efface them on unvarnished pictures.

To study the manner of each great master and even of each great school would be to go over the ground already traversed in our historical survey of technique. Moreover, theoretical knowledge is no substitute for experience. One general rule applies in principle to every case. It is this: the restorer must do his best to assimilate the handling and colour of the sound parts of a picture, and must refrain from encroaching on these parts in order to harmonise and mask his re-touches. This, as we have seen, is Dinet's contention. The danger of re-touching lies here. Indolence leads the restorer to apply a dubious re-touch; conscious of the discord, he re-paints the whole passage, and to bring this into the general atmosphere he transforms the whole aspect of the picture. From this process to a forgery there is but one step: the difference is only in the intention; the result is practically the same.

In repairing a Primitive picture, generally painted on panel and often in some kind of tempera, it may be difficult to recognise paint which would dissolve under moisture. In the case of tempera pictures, it is well to take great precautions when the general tone is so light that there is little difference between the luminous parts and the dark passages.

If the restorer has to deal with an oil-painting of this period, the material, on the contrary, is hard and resisting, unless the colour is beginning to scale from the foundation. We know that the priming of this period was composed of Spanish white and

DIFFICULTIES OF RESTORATION

size. The size, which has been alternately softened and swelled by the damp, and contracted and dried by the heat, has robbed the priming of its consistency. The size has decomposed and the priming has cracked. The paint suffers from the deterioration of its ground; it cracks and scales, and becomes a favourable field for every kind of mischief.

Re-painting on the pictures of this period requires the utmost delicacy of touch. The broader manner of the Italians and Flemings of the Renaissance is less difficult.

As the French school down to Poussin is a reflection of the Italian school, it offers no special difficulties. But from Poussin onwards, the French school becomes very dangerous ground for the restorer. Each master evolved a different technique for himself, full of charm, grace, and spontaneity. As we draw nearer to the eighteenth century the complications increase, and we are confronted with extraordinary virtuositities, glazes and technical devices without end.

If, by good luck, only a portion of a glaze has disappeared, it may be restored with due skill; but when it has been removed bodily, how are we to know that it once existed, and how are we to imagine what it was like?

What, for instance, are we to think of a picture like Greuze's *Village Bride*, in the Louvre, when we read what was written about it by the painter Pierre in 1782, at the moment when the picture was bought at Mons. de Marigny's sale, and became the property of the king?

"Mons. Greuze's best picture," wrote Pierre,

THE TECHNIQUE OF PAINTING

“very good and very fine (*sic*). All the glazes Mons. Greuze used have evaporated, hence a crudity which did not originally exist. Pictures painted in solid colours improve with years ; those whose harmony is fictitious deteriorate. All the artists were struck by the present instance.”

The picture dated from 1761. In twenty years it had already lost its glazes ; yet it is a picture which seems to be fairly well preserved. What would remain of its original appearance if, in addition, it had suffered materially ?

In the present day, the public is interested in the preservation of the works which form part of our national patrimony ; restorers are in general more skilful, more conscientious, and more strictly supervised ; keepers of art treasures are more learned, and have a greater sense of their responsibilities ; more intelligent care is bestowed upon the pictures in our great museums.

But under the ancient *régime*, before the Revolution, the pictures which formed the royal collections, and are now in the Louvre, underwent drastic restorations. We have the sorrowful assurance that what we now admire are for the most part travesties, and in many cases, perhaps, caricatures of the original works of the greatest masters.

To convince ourselves of this fact, it will suffice to remember that in less than a hundred years a picture suffers fatally in its varnish and its foundation, that it requires the removal of the varnish, re-lining, perhaps transferring, and finally repairs and restorations. Now before the Revolution, these operations were entrusted to artists of no distinction, who worked entirely without supervision.

RESTORATION OF PICTURES IN THE LOUVRE

What happened? Rather than set to work to fill up cracks and repair damages, a difficult and delicate task, which entailed the possibility that the re-touches would become apparent some day, and stand out like stains on the picture, the restorer entirely re-painted skies, faces, draperies, and even nude figures.

Proof of these barbarities is to be found in the accounts of the restorers, who at the time of the Revolution began to work under the control and superintendence of art commissions. The first Museums Commission inquired into these matters from 1792 to 1794, and thereupon accounts came to light which contain the most lamentable revelations.

Extract from an *Account for restoration of a portion of the pictures in the Museum housed in the Galerie des Plans*, by Citizen Regnaud, painter, Rue des Cordeliers, etc. . . .

For restoration of a Village Fête (La Kermesse), by Rubens, on which it was necessary to spend a very long time in order to remove a sky which had been re-painted, and to carry out other operations. 240 livres, reduced by the Commission to 200 livres.

Further on:—

*For cleaning, and removing the varnish and the repaints from two pictures in the Rubens Gallery, one representing The Landing of Marie de' Medicis in France, the other The Accouchement of Marie de' Medicis. 200 livres each = 400; reduced by the Commission to 300 livres. For a landscape by Rubens, The Rainbow, 72 livres, reduced to 66.**

* *Archives de l'Art français*.—Unpublished documents, Vol. III., Library of the Ecole des Beaux Arts.

THE TECHNIQUE OF PAINTING

I will stop here, for the list is too long. When we think of the delicacy of Rubens' colour in the shadows, we may ask what can have happened to a picture covered with re-paints, and then relieved of these? What can we accept with any confidence in these pictures?

At the same period, Hacquin put new stretchers to the *Apotheosis of Henri IV.* and the *Coronation of the Queen.* Rubens' *Virgin with Angels*, originally on panel, but already transferred to canvas, was cleaned and restored in 1793.

Poussin's *Deluge*, which split two years ago, and had to be transferred to a new canvas, was restored at the time of the Revolution by Martin Laporte, who declared that it was "obscured by dirt of long standing." Poussin's *Diogenes*, his *Woman taken in Adultery*, and his *Infant Moses* were all restored by the same artist.

Martin Laporte also restored, in 1792, the *Holy Family of Francis I.* "Cleaned," says the account, "and mended the head of the Virgin, which was damaged by scales, cracks and little holes. . . . Re-touched with ultramarine (?), with the greatest care and by the help of a magnifying glass (200 livres)."

He also restored Correggio's *Saint Catherine*.

But David attacked the Museums Commission; he accused it of incompetence, and declared it had "done fatal damage to monuments of art." In Correggio's *Antiope*, for instance, he said, the glazes and half-tones, in a word, all that specially characterises Correggio and puts him above the greatest painters, have disappeared. Was he right? Did he not exaggerate? Who can say at present?

This Commission was suppressed in 1794, and

PREPARATIONS FOR RESTORERS

replaced by another which certainly tried to do better. Did it succeed? It is so difficult to see well, it is so rare to see correctly. So many painters, and among them some of the best, are incompetent judges. In our own day, when we consult certain restorers and they become confidential about the work of their colleagues, we are horrified to hear of the vandalisms daily committed with impunity. It is true that some of these revelations must be discounted by consideration of professional rivalries and the calumnies they inspire.

I appeal once more to Dinet, who also deals with re-touching in his little volume, and prescribes a method, at once prudent and practical, of restoring a picture:—

“The varnish having been removed, the cracks must be filled up, and the portions that have scaled off must be replaced. We have seen that it is impossible to prevent these re-touches from darkening after a time, and standing out like stains on the picture.

“To obviate this defect certain conscientious restorers use only water-colours, which dry quickly and do not darken.

“Their method is good, but it is somewhat inconvenient, and as white must be excluded from their mixtures, it makes most repairs very difficult to harmonise.

“Here is another method, which, with a little practice, will enable the restorer to make perfectly invisible re-touches, which will not darken with time.

“Mix the yolk of an egg with an equal quantity of water and the same of vinegar; stir these together, and use this liquid to moisten water-colours; for white, the zinc white commonly called Chinese white should be used. Paint in thin layers, lightly applied.

“Instead of whitening as gouache (body-colour) does, these colours will darken as they dry, as do oil colours, and will become lustreless; but as this will take place in a few minutes, it will be possible to judge of the effect at once.

“If the tone, which must, of course, be rather light when

THE TECHNIQUE OF PAINTING

applied, does not harmonise perfectly with its neighbour when it is dry, it can easily be removed with a sponge, and the operator can try again until he is satisfied.

"As it is more difficult to model in this material, the restorer will have less temptation to re-paint the surrounding parts of the picture. The repair should be very lightly varnished with shellac (fixative used for charcoal drawings).

"Finally, the whole picture should be carefully varnished according to the instructions given above.*

"If this method of restoration were generally adopted, we could admire the pictures in our museums under the most favourable conditions. The thin coat of ancient varnish left on them would suffice to give them a warm harmony, and the re-touches, which would only fill up the voids, would no longer revolt us, for they would only cover bare places on the canvas, and not the handiwork of the master." †

Dinet adds the following comment :—

"It would be well, as a general principle, to forbid all re-touching with oil paint; this must inevitably produce dark patches. It is the oil which causes all the disasters due to restoration; it should be banished inexorably."

It may not be amiss to say a few words about the re-touches and restorations applied by an artist himself to his picture.

At the first blush, it would seem impossible to have a better restorer for a picture than the author of the work. But this is a mistake. Every artist knows how difficult it is to copy one's own work. It is much easier to copy that of another. A painter who is confronted with a difficult repair in one of his own pictures does not scruple to adopt a variation of some kind. This may lead him very far. Even if the transformation

* Dinet also recommends the Muzii "brilliant tempera colours," which look like oil colours, and dry in a few minutes. Colours in powder also are sometimes mixed with a mastic varnish.

† *Le Filiaux de la Peinture*.

GLASS OVER PICTURES

be quite equal to the original version, will the owner of the picture be pleased to have a new work sent back to him, when he has become accustomed to the first, and has an affection for it ?

In such a case, it will be to the advantage of the painter himself to give way to a skilful restorer, for he will find it very difficult to suppress his own inclinations before a personal creation ; an expert stranger will deal more faithfully with it.

Ceilings.

It may be said that, thanks to their protection from dust and from strong light, the ceilings in museums are not very liable to accidents. As gas is banished, and damp does not attack them directly, most of them are well preserved.

Paintings under Glass.

In a memorial presented in 1775 to the Académie des Sciences, and now belonging to the library of the Ecole des Beaux Arts (*Moyen de conserver sans altération les tableaux peints à l'huile*), Sieur Vincent de Montpetit begins by calling attention to a curious fact. He says that to see the pernicious effect of the air on pictures, it will suffice to wipe the glass over a pastel with a damp white cloth ; it will be covered with brown dirt. Since 1775, the colour has changed. What we now wipe off is pure black.

To obviate this evil, the author of the memorial proposes to paste oil pictures to sheets of very clear glass. The method was, it appears, approved by the Académie des Sciences, and the author adds that his wife has been pleased as an "amatrice" (*sic*) to

THE TECHNIQUE OF PAINTING

employ herself in protecting old pictures by his process. He does not reveal the secret of his method; he points out, however, difficulties, which he claims to have overcome, and he recommends distrust of imitators, who know nothing of the process. He concludes by inviting amateurs to come and see the results he has obtained.

This practice has not survived. It is easy to imagine why. The glass, if broken, would work terrible havoc. And then, what kind of paste could have been used? Its action upon an old varnish, or on new pictures, even if unvarnished, would be disastrous.

On the other hand, certain acts of vandalism committed in museums have led of late years to the practice of covering pictures with sheets of glass. These glasses, which are kept away from the surface of the picture, allow a stratum of air to reach it, while protecting it from damp, gas, and dust. The practice was not a novel one; it had long been common in private collections, and many artists were already in the habit of sending their pictures to the Salon under glass.

Some amateurs complain that the reflections on the glass destroy the appearance of the picture, and even prevent one from seeing it. Others maintain that the lustre of the glass gives depth to the tone, and richness to the paint; the picture borrows beauty from outside. It is unquestionable that glass has advantages as tending to preserve the picture. This is of great importance and suffices to justify its adoption, more especially in museums, where pictures are less safe and less carefully tended than in private collections. A collector who

DETERIORATION OF PASTELS

houses his pictures in a safe and healthy place, who watches over them and keeps them in proper condition, may dispense with glasses, if he dislikes their lustre.

Pastels, Water-Colours, Gouaches.

Exposure to the sun is more hurtful to water-colours and pastels than to oil-paintings. The sun will affect the appearance of a pastel in a few days; if the exposure is full and continuous, four or five days will be long enough to destroy it entirely.

Pastels and water-colours should be hung in a good light; this is necessary for the preservation of the colours, but they must be carefully protected from the sun.

Pastel in particular requires continual precaution and care. Even in a place that seems perfectly safe, mildew will sometimes appear on the inner surface of the glass. This mildew, even if it does not extend to the pastel, should be removed at once, for when it dries and falls in powder to the bottom of the glass it will transmit its germs to the pastel. The damage, beginning at the base of the picture, will gradually invade the whole surface.

When mildew has attacked the pastel, the only remedies are scraping and restoration. The bloom of the mildew is first gently removed; then the spots are scraped. When the root of the fungus has been reached, a touch of medium hard white pastel is applied, to absorb any moisture that remains. This is left for two days, and then the repair is made in colour.

In matching tones, it must be remembered that our range of crayons is much greater now than formerly.

THE TECHNIQUE OF PAINTING

The scale includes three hundred tints. The number has increased very much since 1820, and the pastellists of the eighteenth century had only about thirty. This fact must be borne in mind when an old pastel is restored. Certain shades that we now apply pure were obtained by mixture. There were no violet crayons, for instance, and if we want to match a violet tint in an old pastel we must use a mixture of red and blue.

Water-colours are cleaned by the help of bread-crumbs rolled into a ball; with this the colour is rubbed. India-rubber may be used, but very cautiously, for the more obstinate stains. As this removes the colour, its use entails re-touching. It should therefore only be applied in cases of absolute necessity. Ink-eraser, which would destroy the colour and scratch the paper, should never be tried.

Touches of white body colour always darken in old gouache paintings. A few touches with a brush dipped in slightly oxygenised water will give back their pristine whiteness, a remedy discovered by Thénard. Formerly white lead was the only white known; zinc white, known as Chinese white, does not darken so readily.

Frescoes.

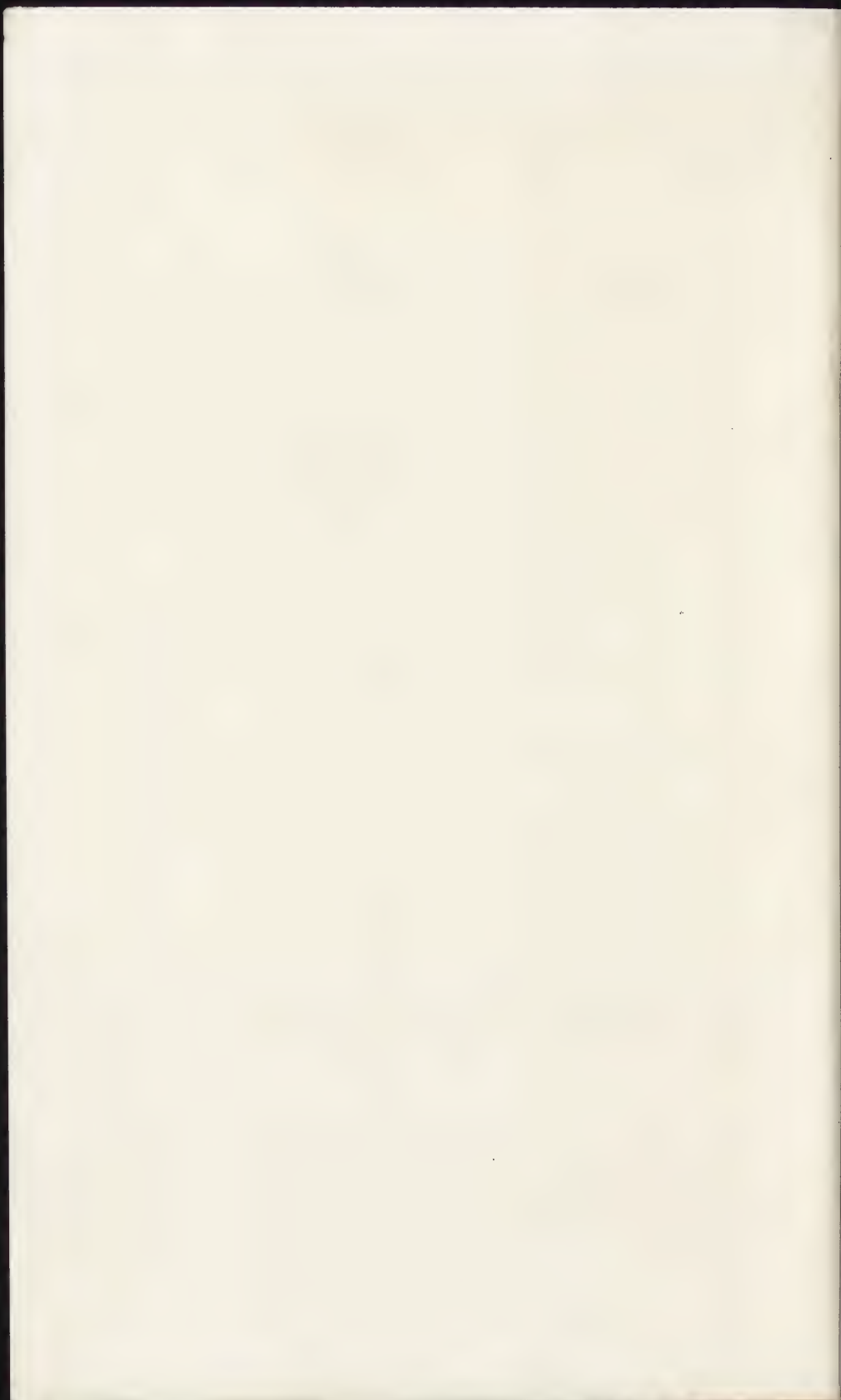
As a certain number of colours, such as ultramarine, cinnabar red, and bright green, are unsuitable to the processes of pure fresco painting, most frescoes contain passages executed in distemper; that is to say, with an agglutinant which dissolves in water.

Fresco proper then resists water, but the distemper portions succumb to it. It is therefore necessary to

DETERIORATION OF A FRESCO



Deterioration due to alternations of damp and dryness. The colour blisters, bursts, and scales off : PORTRAIT OF PINTORRICCHIO, at Spello.



CLEANING FRESCOES

clean frescoes very cautiously, and to have recourse to different methods for the pure fresco portions and those in distemper.

To distinguish between the two a wet sponge should be applied to a corner of the picture; pure fresco resists, distemper yields to the sponge.

In either case, bread-crumb may be used to remove dust, but pure water should be used to clean a fresco thoroughly; some persons recommend the addition of a little vinegar, but Dinet warns me that the acid affects lime.

If the fresco is mildewed, it should be gently warmed by a stove placed at a certain distance from the wall. The mould will then turn to powder, and may be removed with bread-crumb. If the painting is in pure fresco, the mildew may be washed off with water to which a little ammonia has been added.

For various reasons frescoes have been occasionally covered with whitewash. In 1630 this was done at Verona as a precaution against plague. Different methods have been adopted to remove the whitewash and bring the painting to light again. Sometimes wet paper is applied and left to dry; when it is removed, it brings away the whitewash with it. Sometimes the wall is tapped with a special hammer which detaches the coat of whitewash; other instruments used for the purpose are trowels, spatulas, palette knives, etc.*

Forgeries.

We have shown that when a restorer takes upon himself to re-paint important passages in a picture,

* See Mons. Gerspach's article in the *Revue de l'Art chrétien*, Library of the Ecole des Beaux Arts, A6—687.

THE TECHNIQUE OF PAINTING

and invades the canvas to such an extent as to replace the old painting by a new work which has very little to do with the original, the restored picture is practically a new one, which ought not to bear the name of its first author, and is, to all intents and purposes, a forgery.

These operations, which result sometimes from an involuntary zeal, were formerly performed without scruple or concealment, and with intentions which do not seem to have been considered reprehensible at the time.

In a volume dated 1851, Horsin-Déon* speaks of pictures called in French *tableaux à tournure* and in Italian *quadri di fabbrica*; these were nothing but forgeries, which were manufactured without exciting public reprobation.

The operators took an old picture of some famous school, painted by a third-rate artist of that school. It combined the qualities looked for in an ancient masterpiece: an old canvas, old, cracked paint, all the infirmities of age, real, indisputable and authentic, and a handling and technique no less genuine. As, however, this worthless picture was by an artist lacking both fame and talent, it was worked up by re-touches and glazes to the style of the great master, the head of the school. Horsin-Déon quotes the painter Patel, whose canvases made excellent false Claude Lorrains.

The re-paints were given a patina to harmonise with the old paint. Saffron, bistre, liquorice and coffee were used according to circumstances. The whole was then varnished. The varnish again was tinted with a mixture of yellow lake, bitumen, and

* *De la Conservation et de la Restauration des Tableaux.*

FORGERIES

red ochre. This gave the accent of the period and the necessary look of age to the re-touches.

Horsin-Déon mentions artists who enjoyed a great reputation in the middle of the nineteenth century for their skill in painting forgeries. Darcy counterfeited Greuze, but Albrier surpassed him in the art. The early landscape painters were very cleverly imitated by Messrs. Moret, Grailly, and Bourgeois. These imitators posed openly as imitators, or Horsin-Déon would not have spoken of them with the calm admiration he manifests for their dexterity.

Mons. Pérignon the Elder produced "really distinguished" imitations of Ostade and Ruysdael. Mons. Roehn imitated Van de Velde "admirably." Mons. Rioult painted Prudhons "which will one day puzzle the subtlest connoisseurs."

Yes, indeed! What scores of these old masters scarce fifty years of age there must be, surrounded by honours, and throning it as venerable master-pieces in private collections and even in public galleries.

But alas! these forgeries, executed secretly or openly, were not confined to the nineteenth century. I have mentioned Claude Lorrain. Why should we wonder that he is imitated now? He was copied even during his lifetime, and it was to defend himself against forgers that he made his *Liber Veritatis*, in which he included a drawing of every one of his pictures and noted its dimensions.

At the same period Lebrun, while still a young man, painted, without acknowledging the *pasticcio*, a picture which was taken for a work of Poussin's, and on which Poussin was congratulated. Lebrun then

THE TECHNIQUE OF PAINTING

owned the work, and affected to have acted the part of an enthusiastic disciple.

No such confession was made when Andrea del Sarto, at the request of one of the Medici, copied Raphael's portrait of Leo X. This copy was sent to the Duke of Mantua as an original, and deceived Giulio Romano himself. All the world would have believed that Raphael had painted a replica if the fact had not been proclaimed later by Vasari, who, as Andrea del Sarto's pupil, had witnessed the execution of the copy, and even collaborated in it.

How many names might be cited in this connection! Guido was copied by Boulogne; Paul Potter by Albert Klomp; Snyders by Paul de Vos; Velvet Breughel and Wouwermans by Jan van de Breda; Jan van Huysum by Jacob van Huysum. Luca Giordano copied everyone, and David Teniers, whom everybody copied, spared no one, and produced *pasticci* of Titian himself.*

But if we go back still further to the past of Italian painting, if we come to the workshops of the early Renaissance, and the gangs who worked under popular artists, it must be confessed that many pictures of this period must be looked upon more or less as forgeries. When a painter blocked in a composition which was then finished by his pupils; when he even contented himself with approving a composition which could boast nothing of his but this approval; when every studio was a kind of factory where the pictures turned out had only a formula and an ideal in common, we may

* Paul Eudel, *Le Truquage*.

FORGERIES

ask whether the pictures so produced can really satisfy amateurs who insist upon authenticity.

It was not until the time of Michelangelo that a consciousness of artistic property began to manifest itself among artists. Before this, no painter scrupled to adapt any figure that suited him from the work of a colleague. Art was practised as a kind of superior craft, in which individual ideas became common property; artists of talent hired themselves out to other artists, and become their anonymous collaborators. Raphael was the director of a band of distinguished painters who never aspired to liberty, and seldom dreamed of executing works on their own account. Rubens, who adopted the custom, employed numerous talented artists, many of whose pictures he never touched. There are certain portraits of his which we have every reason to suppose were entirely painted by Van Dyck. Rubens' manner, imitated by Van Dyck and approved by Rubens, is a combination of great interest to the dilettante; but would not a scrupulous collector be justified in thinking a picture with this origin not above reproach?

By a curious contradiction forgeries multiplied as soon as the sentiment of proprietorship awoke. "Property is robbery," it has been said, and assuredly it consecrates and invites robbery. It has been noted that as soon as a new fashion in collecting arises, a new form of forgery promptly makes its appearance. Even pre-historic remains have their artists in counterfeit.

But for the last fifty years more especially, the art of skilful forgery has been very successfully practised. The best connoisseurs need to be on

THE TECHNIQUE OF PAINTING

their guard. "The custodians who preside over the barriers at the Louvre" have not been able to exclude it from our museums.

I shall attempt to describe some of the best known and most widely practised methods of the forger. But the fact that they are known makes it probable that these methods, which have been exposed, are now only discernible in forgeries that are not quite recent. In the newer products there are no doubt other tricks to discover. But in general those which I point out as the most usual are essential to every forgery, and hence it is well to know of them.

We have seen that the pictures known as *tableaux de tournure* were forgeries painted upon canvases of the period of the master imitated. This method is still practised. An old, worthless picture is procured; it is cleaned off and then covered entirely with a subject resembling the style of a famous painter. There is a simpler method still: a modern copy of an old picture is glued to an old canvas. It is represented as a replica of the original, or even as the true original, the genuine work being declared the replica. (The newspapers have lately described forgeries of this kind.) This glueing together, called *marouflage* from the particular kind of glue used (*maroufle*), is not easily detected once the canvas is fixed on the stretcher; the old back induces belief in the authenticity of the picture by lying about its age.

In Germany for some years past they have been manufacturing false Primitives by an analogous process. Many good chromolithographs of the old

DEVICES OF FORGERS

masters have been offered to the public of late. The forger takes one of these chromolithographs and rubs down the back of the paper with pumice-stone. When the chromo is reduced to a mere skin of colour it is pasted to an old canvas or panel and varnished freely. The trick is done.

Varnish is one of the most useful weapons in the forger's arsenal. It gives an appearance of age and masks weaknesses of execution. It is coloured golden, or even tinted with bitumen. The dirt of time—either above or beneath the varnish—is counterfeited by liquorice juice, ashes steeped in water, or lamp black. Poured upon the canvas, spread and rubbed with the palm of the hand, these coloured juices penetrate deeply into the impasto.

Fly stains are not forgotten; a little gum tinged with sepia and Indian ink is mixed with water; a brush is dipped in the mixture and the hairs are pulled back sharply; the little drops that are squirted over the picture imitate the dirt of flies to perfection.

Re-paints are even added sometimes, dark and clumsy re-touches, which are designed to emphasise the age of the picture by contrast.

An old picture not only darkens and turns yellow; it also cracks and splits sometimes, both in the colour and the varnish. The manufacturers of false pictures do not forget to imitate the cracks, which they produce by various means.

The picture is exposed to the sun, or even in a baker's oven. The advantages of this process are twofold: the paint scales and, moreover, it dries; it gains hardness and enamel—signs of age in a

THE TECHNIQUE OF PAINTING

picture. Cracks are further produced sometimes by scratching the surface with a pin. Another way is to take a sheet of metal and lay it over the canvas, which is supported beneath ; the metal is then struck smartly with a hammer, and painting and varnish crack as much as the operator desires.

One of the methods recommended to test the age of a picture is to stick the point of a needle into a corner of it, in the full impasto. In a picture painted within the last fifty to eighty years, the needle penetrates, making a small round hole ; if it is older, the impasto cracks like china. A crack forms, and not a hole. This is a good test ; but a picture that has been baked in the oven will probably have dried and hardened prematurely.

It is also said that in a modern picture, the colours yield to the slightest friction with spirits of wine, whereas old paint resists. This method of verification is excellent in itself. But the forgers have thought of it, and one of them conceived the idea of covering his pictures with a thin coat of very liquid size. The spirits of wine cannot bite through this to the paint ; it slips about on the size, unable to attack it.

Although these gentry take upon themselves to paint master-pieces, they are conscious of their own weakness ; when some passage is so far inferior to the rest that they think it might betray them, they are careful to hide it modestly. They show no less ingenuity here than in other directions. First of all there are thick varnishes, the gloom of which they draw over dubious portions ; then dirt will render the same friendly service. Clumsy re-paints

FORGED SIGNATURES

again are useful, and look like restorations. Best of all, there is bloom. The corner that is to be hidden from the too-searching eye is rubbed over with a wet cloth. The water produces mildew, and this forms a stain which has a double value: it hides the dangerous passage, and gives it the infirmity of old age.

Finally, as the forger does not recoil from any means by which he may inspire confidence in the customer, he not only cultivates bloom and mildew, but even splits his canvases right through, taking care to mend them in a very obvious manner. What would be the use of splitting a canvas to endow it with age and value, if the necessary repair were carried out with too much skill? Here, however, the operator is apt to overreach himself, for as restorers can now mend a torn canvas with such nicety that the repair is quite imperceptible, it is well to distrust a canvas that is clumsily repaired.

As to signatures, they are imitated by specialists, veritable experts, who are familiar with the signatures of all the famous artists. These adroit gentry, who are called monogramists, know the habits of each great painter, the way in which he signed, the place where he signed, the colour he used for his signature. They are cunning enough sometimes to conceal the name more or less under a layer of dirt or paint, that the customer may have the pleasure of discovering it for himself. How can he doubt the genuineness of his purchase after this?

The very execution of forgeries is marked by no less variety of method.

A picture by a master is copied, and a variation of some kind is introduced; a passage is taken from

THE TECHNIQUE OF PAINTING

one picture and combined with another, or several others, taken from other works of the master. Thus the style and manner of the artist are obtained, together with a perfectly new subject. A composition is reversed: or a simpler process is adopted; the signature of an obscure painter is effaced, and that of a famous master who painted in a similar manner is substituted.

This operation was very often performed on pictures by Hobbema, at a time when Hobbema was not in favour. As Ruysdael, who painted similar subjects, had a great reputation, dealers effaced Hobbema's signature, and replaced it by that of Ruysdael. Thus it is probable that many so-called Ruysdaels are false Ruysdaels, but real Hobbemas.

Among modern pictures, I may cite the well-known story of the pictures by Trouillebert, which became Corots and were so much admired by Dumas under Corot's signature. The occurrence is common enough. An obscure artist named Vernon paints and signs pictures which recall the manner of Diaz. Dealers substitute the name of Diaz for that of Vernon. The same process is adopted with the works of Mons. Pata, who paints in the style of Courbet.*

I have told elsewhere how a picture painted by Mons. Guillemet in his youth was found one day in a collection with Courbet's signature on it. Sometimes the substitution is very easy. A dealer offered the painter Benner a good price if he would paint him some pictures in the manner of Henner. There would have been only one letter to change.

* Paul Eudel, *Le Truquage*.

DISHONEST DEALERS' TRICKS

It is enough sometimes to erase a Christian name ; thus Victor Duprés have become Duprés, and even Jules Duprés.

At the sales which take place after the death of famous artists there are often unfinished studies, pictures barely blocked in. As they all bear the official stamp of the sale on the back of the canvas forgers increase their value by painting into the dimly-suggested picture a finished composition, furnished with the most indisputable certificate of authenticity, which they sell for a large sum.

They do worse things even than this. One of them bought at Fromentin's sale an *Arab Falconer*, painted on panel, and sawed the panel through edgewise. This gave him a perfectly genuine picture without the sale stamp, and a blank panel furnished with the stamp of the Fromentin sale. All that remained to be done was to paint an *Arab Falconer* on the spare panel, which was promptly accomplished.

It is not enough to be able to paint a skilful forgery ; means must be found of selling it well. Dealers are no less cunning than the manufacturers of these wares.

A French collector who was passing through Florence bought a picture. The dealer offered to send it to his hotel, and proposed that he should write his name and address on the back of the panel. The collector agreed, and did so ; then, thinking better of it, he carried off the picture with him, in spite of the objections of the dealer, who seemed singularly disturbed. When he got home, the traveller took the picture out of the frame to clean it, and found that he had brought away two

THE TECHNIQUE OF PAINTING

panels stuck together ; the first—the picture he had bought—concealed a copy, on the back of which he had signed his name. If he had allowed the dealer to send his purchase to the hotel, he would have received the copy. Had he declared that it was not his picture, he would have been shown his own signature on the panel.

In Italy, where the law forbids the exportation of works of art without the permission of the Government, the owners of collections order copies, and put these in the places of the originals, which they send over the Alps in secret. In France, the owners of historic *châteaux* sell their family portraits in the same fashion, and friends who are not in their confidence continue to admire the copies of pictures that have been sold. When, on the death of the owner, these copies, which everyone supposes to be indisputably genuine, are sold, forgeries are put upon the market which have all the externals of authenticity.

Certain dealers have pictures engraved to give them these marks of authenticity. False pictures of the school of 1830 have been thus engraved. These patents of nobility are forgeries.

Strange to say, no one is more difficult to convince of the falseness of a picture than its owner. When a forgery has made a dupe, it has gained a champion more ardent and more faithful than the dealer who sold it.

An artist once made the following remarks to me : " If you see a false picture in a collector's house, you must never tell him so, never. If I saw a forgery of one of my own pictures, signed with my name, I should certainly refrain from enlighten-

SPURIOUS PICTURES

ing its owner—unless the latter were a dealer, in which case there would be the devil to pay. But I should not say a word to a collector. If the forgery were very bad, and might injure my reputation, I should attribute it to my youthful period, but that is all. And this, because the collector would never forgive me for having told him the truth. I am certain that he would never buy another of my pictures—not even a genuine one.”

A landscape by Guillemet had been furnished with Courbet's signature. The owner was informed of this. He replied: “It is an absolute mistake. I bought this landscape from Courbet himself.”

Just think a moment! These pictures represent money. If you prove that they are forgeries, they no longer represent anything. You not only annoy the collector, but you rob the proprietor, or at any rate, he thinks so. Indeed, how is it possible for him not to feel resentment and not to defend himself? This man has made an investment both of vanity and money. He feels that you are going to deprive him of his reputation as a *Mecænas* and a connoisseur, to prove him a dupe, and at the same time to strip him of the large profit he hoped to make by selling his picture some day.

There was a collector who bought a picture by Diaz. Diaz himself told him he had been deceived. Not only did the collector refuse to believe him, but he went about telling everyone that Diaz did not know what he was talking about.

The infatuation of a collector who thinks himself an artist sometimes seduces him into retouching his pictures to improve them. This

THE TECHNIQUE OF PAINTING

mania is attributed to La Caze ; the fine collection he gave to the Louvre is said to have undergone a good deal of re-painting.

How to protect Oneself against Manufacturers of Bad Colours and Forgers of Pictures.

The solidity of a picture will depend on the manner in which it is painted. This is quite certain, since in these days we are able to manufacture permanent colours. But if the manufacturer uses defective material, however carefully the painter works, his pictures will deteriorate. We have seen how to test a pigment as to which we have suspicions. If manufacturers were compelled to give good materials, all these precautions and experiments would be greatly simplified. Painting would still be a difficult business, even from the point of view of durability ; but painters would no longer be able to lay the blame on manufacturers when colours deteriorate. All they would have to study would be the consequences of their manner of painting, in reference to the colours they use.

Vibert has proposed a remedy which we have mentioned briefly, but which seems to deserve further notice.

"It would be enough," says Vibert, "if painters, when they buy a tube of colour, would insist that the label should bear not only the usual name of the colour, but also the chemical formula. By this means, if the manufacturer did not furnish what he declared, he could be prosecuted, like all other vendors of adulterated goods."

Vibert proposed to the Société des Artistes

PROPOSED LEGISLATION

Français that they should appoint a permanent Commission to deal with art materials. All branches of art should be represented: painters, sculptors, engravers, architects would here inquire into the practical interests of their art, processes and inventions, and would make the information acquired available. It would enter into treaties and agreements with the manufacturers and the dealers in art products. It would publish a monthly Bulletin. It would found a laboratory, and attached to this would be a chemist, whose duty it would be to study the questions submitted to him by the Commission and carry out the analyses required by artists, manufacturers, or dealers.

The Society would not allow a monopoly to any manufacturer. It would give dealers gratuitous authority to label their products with a stamp certifying the approval of the Commission for Art Materials. Each manufacturer and dealer, on his side, would engage, on pain of a severe penalty, to furnish a product identical with a sample approved and preserved by the Commission.

If artists could be sure that the stamped products were well made, they would give these the preference; and as the stamp would be refused to no one, all manufacturers and dealers would end by asking for the stamp and accepting the conditions.

As the materials that we now possess enable us to make more durable colours than those of the past, as, on the other hand, there seems to be a very general opinion among artists that colours are badly prepared,* the plan proposed by Vibert is

* One of the greatest and most famous of our contemporary painters summed up the opinion of artists quite recently in these words: "Colours? The further we go, the more there are, and the worse they are."

THE TECHNIQUE OF PAINTING

an excellent one. It would enable manufacturers to prove that artists are mistaken, and it would restore the artist's confidence in the manufacturer. The present misunderstanding would be put right. Everybody would gain. Certain manufacturers have already adopted the practice of giving the chemical formula on each tube they sell, but this practice has not become general.

Mons. Eudel proposes the creation of a Central Bureau of Information relating to contemporary artists, their works, prices, etc., for the protection of artists and collectors against the manufacturers of and dealers in forged pictures.*

This idea was taken up and gone into by the *Journal des Arts*.

An association, called like the ancient guild, the Society of S. Luke, would furnish collectors and buyers with the necessary documents and certificates concerning the value and authenticity of pictures by contemporary painters.

After examining the canvases submitted to it, the Society would stamp them. It would keep in its registers a note of the signature, and a brief description of the picture.

Not only would these documents be useful now ; they would provide a fund of information for the future which would prevent any discussion about artists now living. A complete list of their works would exist, together with the names of the buyers who own them, and, by an arrangement which would involve no inconvenience, all changes of ownership would be notified.

* *Le Truquage*, Librairie Molière.

COMMISSION TO BE APPOINTED

This method of defence would be as simple to establish as it would be useful in its results.

Neither the Commission of Art Materials nor the Central Bureau of Information has been created. They have been discussed and approved, and nothing more has been done.

But just as I am finishing this book, my friend, the painter Henri Bénard, has introduced me to Mons. Bordes, chemist, Professor of the Collège de France, and inspector of the chemical services of hygiene, who, as he knows, is interested in this question of the manufacture of colours. Mons. Bordes tells me that, by virtue of the *loi Ruau*, of August 1, 1905, dealing with the suppression of fraud in the sale of goods, Vibert's project might easily be realised. Encouraged by Mons. Bordes' information and with his concurrence, I asked the opinion and solicited the support of certain artists—Messrs. Bonnat, Member of the Institut, Director of the Ecole des Beaux Arts; Carolus-Duran, Member of the Institut, Director of the French School in Rome; J. P. Laurens, Member of the Institut, former President of the Société des Artistes Français; Roll, President of the Société Nationale des Beaux Arts; Humbert, Member of the Institut, Professor at the Ecole des Beaux Arts; Harpignies; Dinet; Marcel Baschet; Girardot; Henri Bénard.

As these gentlemen, in response to our appeal, have expressed their wish for a measure to regulate the sale of colours, the Minister of Agriculture has agreed to appoint a competent Commission, made up of artists, chemists, and colourmen, who will draw up a Bill. Presented to the Minister of

THE TECHNIQUE OF PAINTING

Agriculture, and then submitted to the Council of State, this Bill will come back with the approbation of the Ministry, and will appear in the *Officiel* with the authority of a law.

HOW TO LOOK AT PICTURES

“ EVERY man of the world is learned enough to appreciate the grace of a pretty woman, and yet we do not deign to acquire the easy but indispensable art of seeing pictures.” Stendhal was not altogether right when he wrote these words ; *indispensable* is true enough ; but *easy* is not.

To see a picture properly is difficult. In the first place, all pictures cannot be looked at in the same manner.

But there are two rules which must be observed before every picture : we must forget our own vision, and we must assimilate that of the painter.

Our memory of Nature must not be tyrannical. We must renounce our own way of seeing, unless it conforms to that proposed to us ; the more we enlarge our sphere of appreciation, the greater will be the sum of our enjoyments. Therefore we must not accept unreservedly the criticisms of painters, who are rarely able to dissociate themselves from their own special manner. Too often approbation from a painter implies the recognition of affinity.* In proof of this, we need only recall the ferocity of the juries of the Salons towards all new methods of painting. They are no more capable of judging them fairly than the veriest Philistine.

* There are, of course, exceptions. Such artists as Mons. Bonnat and Mons. Degas are eclectic art-lovers, and distinguished connoisseurs.

THE TECHNIQUE OF PAINTING

To accept the artist's point of view is essential. The spectator must, above all things, bow to the painter's ideal, recognise it, and seek the joys it offers. This should be the preliminary of all criticism.

We must begin by finding out what was the end the artist proposed to attain.

The first glance at a picture from a distance is informing. Even before we grasp the subject or the lines, we see and appreciate the distribution of the coloured masses. A true connoisseur, standing in the middle of a room full of pictures, can determine which of the works are worthy of his attention by merely revolving on his heels, without going any nearer to them. Van Eyck's *Virgin with a Donor*, elaborate though it be, reveals itself as well at a distance as Rembrandt's *Philosopher*, a work of equally modest dimensions, but very broad in touch. We feel that we are in the presence of the great, though they differ in quality. Large pictures painted by Velazquez, Titian, Rubens, and Veronese impress us from a distance by their plenitude, their nobility, their solidity of structure, while such a vast canvas as David's *Coronation of Napoleon* fails to satisfy by its masses of colour, light and shade. We see at once that it is a work of design and detail.

Let us go nearer. The lines of the composition appear. We recognise it as a literary, historical or plastic picture.

The pleasures of the mind may be combined with those of the eye. Our contemporary painters disdain literary, and even historical subjects. And yet these demand qualities of imagination, of

QUALITIES TO LOOK FOR

intelligence, and of knowledge. They instruct, illuminate, and move us. They are unjustly despised at present.

We must allow the right of the literary or historical picture to follow the rules of its own day. If it dates from the older schools, it is developed like a scene on the stage. In the nineteenth century, it became agitated and dramatic. Now it seizes action and outline like an instantaneous photograph. We must accept the ideal of each age and try to appreciate it: the majesty of the old masters, the emotion of the nineteenth century, the search after truth of our contemporaries.

But whether historical, literary, or plastic, a picture must obey the law of representing people and things, of suggesting realities.

At the distance at which we stand the execution should be apparent. We must seize the moment when the most favourable point of view manifests itself.

Qualities will then be distinguished:

Style, that is to say, nobility in composition and in the interpretation of form, as shown by Raphael. (I cite the name most expressive of the quality.)

Design, a scholarly accomplishment if we take it prosaically, as the worship of contour, a supreme gift if we see in it the sense of form and gesture of a Michelangelo.

Colour, which must not be confounded with colours, and looked for in vivacity of tone. It flourishes in the happy combinations which give at once brilliance and delicacy (Titian, Veronese).

Values, that is to say, the exact rendering of light and shadow in their reciprocal relations,

THE TECHNIQUE OF PAINTING

irrespective of their colouring, an essential quality which is the very structure and framework of a painting, a quality of such importance that some painters have made it the whole of a picture, and have relied on it alone (Rembrandt).

Vigour and insistence on form, which is emphasised with a haughty harshness among the Primitives (Mantegna).

Homogeneity, flexibility of contour, softness in the transitions from one external form to another, purely technical qualities in which the Dutch and the Flemings have excelled.

Atmosphere, the relation between near and distant objects, the imitation of the ambient air, a quality which has become such an obsession among our contemporaries that it has too often been exaggerated; persons and things have been shrouded in mists and vapours (Corot).

To these qualities, the most frequent or the greatest, many others more material may be added: *Brio* in dexterous craftsmanship, and liberty of handling, technical qualities much sought after for the last hundred years, freshness of manner and tone, one of the qualities appreciated by our moderns to such an extent that they are content with this alone.

As these beauties and graces are rarely combined, and as certain of them even exclude others, we need not be surprised if we sometimes find but one of them. Ingres thought only of line, Delacroix of colour and expression, Carrière of values.

As we come nearer to it, the picture painted with great regard for detail reveals its qualities of material perfection and of precision. We must

SCRUTINY OF TECHNIQUE

admit that very often it makes a bad impression from a distance ; its elaborate execution causes the over-abundant half-tones to become too dark, and to obscure and sully the modellings when we look at them from a distance ; they only make their full effect when the spectator is near the canvas.*

We have now come very near. The highly finished picture asserts its claim to respect and attention. But whatever a picture may be, if it is well painted, close examination of it is extremely interesting. Such examination reveals its handling, its technique, the manner in which the artist attacked its various portions, and produced the illusion which charms us at a distance. Disregard the injunction of the flock of sheep who tell you to "look at it from a distance," and go close. The highly finished picture will gain from your approach, and the broadly painted one will lose nothing. You will see the scenery from the wings, after having admired it from the front.

The interest of such examination will not, perhaps, reveal itself at once to a person who has never handled a brush ; but the comparison of handlings, and of the results obtained in the effect, will train the spectator's eye by degrees, and he will end by discovering a peculiar attraction in the process, and one full of variety, in these days of technical improvisation ; old painting yields its secrets less freely, and is more difficult for the uninitiated to understand.

When this close examination is over, it is well to

* Painters who work at very close quarters to their canvases are not sufficiently alive to this danger. Hébert, like Reynolds before him, uses very long brushes, which enable him to lay on the paint at some distance from the canvas.

THE TECHNIQUE OF PAINTING

take up a position at the most favourable point of view, and to carry away the remembrance of it.

If we have the power of evoking and renewing images in our minds, the admired passages will re-appear later. They will have become "a joy for ever."

Here is a final word of advice to picture-lovers.

As the best way of seeing a picture properly is to isolate it, as two pictures hung side by side are nearly always mutually destructive, as to find two which enhance each other's beauties is as rare as it is difficult, as museums and exhibitions realise the very worst and least artistic methods of displaying pictures, we need never be surprised to find that a picture we have thought charming in a room or a studio should have become insignificant in an exhibition, nor that an essentially vulgar work should make a good effect in a gallery. Let the picture-lover hold to his first opinion;* let him say to himself that some pictures, like some women, are at their best in an intimate *tête-à-tête*; let him remember never to hang pictures closely together. The farther apart they are, the better they will speak to us.

* He must also remember that the eye has its "bad days," like the temper, when the best painting will seem insipid.

CONCLUSION

CONCLUSION

The public of to-day shows an ever-increasing interest in painting.

Some persons love it as *dilettanti*; others practise it as artists; others, again, as connoisseurs, seek profit in it by the purchase of works destined to rise in price.

In addition to this, the teaching of drawing in schools is gaining in importance, and soon, no doubt, everyone will be able to draw, as everyone is able to write. In short, nearly everyone at present wishes to admire and understand the master-pieces of art.

The moment is therefore propitious for teaching the public what the art of painting is, and explaining the different processes, pointing out their virtues and defects, their qualities and their weaknesses.

This work contains the sum of the most recent and complete inquiries into the subject.

I have taken counsel with the masters of the past and of the present. I have collected the words of artists in their studios. I have consulted the friends I consider the greatest experts in technique, more especially Dinet, who, by general consent, is held to be the most learned of our living painters. I have further noted all that may prove helpful to collectors anxious to protect their treasures from

THE TECHNIQUE OF PAINTING

the perils that threaten them, and their collections from the forgeries that might creep into them.

No other work exists which brings all this information together and offers it authoritatively. I may say this without arrogance, for my precepts are based on the experience and the authority of masters.

I trust that this book may become the *vade mecum* of all lovers of painting. Artists, collectors, amateurs, simple admirers who love to dream in museums, will all find here reasons for loving more, and working better, for understanding and defending the art of painting more perfectly

INDEX

- ACCIDENTS to pictures, repair of, 193
Accouchement of Marie de' Medicis, Rubens, 213
Adoration of the Magi, Rubens, 156-157
Ælian, cited, 8 note
 Alberti, 14
 Albrier, 223
 Albumen, 117
 Alcohol in varnish, 136-137; spirits of wine to remove varnish, 185-188
Aldobrandini Marriage (The), 11
Alexander hurling Thunderbolts, Apelles, 8
Algerian Women, Delacroix, 82
 Altamira, cave-paintings, 2
 Amaury-Duval, *L'Atelier d'Ingres*, quoted, 69-70, 163-164
 Andromache "of the white arms," 6
 Angelico, 14
 Aniline dyes, 148
Antiope, Correggio, 214
 Apelles, 4-5; *Alexander hurling Thunderbolts*, 8; stories of, 8 note; panel paintings, 9
 Apollo, temple of, 6
 Apollodorus of Athens, 7
Apotheosis of Henri IV., 214
Apotheosis of Homer, Ingres, 128
Aqualenta, 103
Arab Falconer, 231
 Arabs, colour-vision among, 73-74
 Aridikes of Corinth, 5
 Arréat, L., cited, 71
 Artistes Francais, Société des, proposal concerning colours, 234-235
 Arts, Society of, London, 51
 Aspertini, Amico, 23
Assumption of the Virgin, Velasquez, 60 note
 Atmospheric gases, effect on pigments, 149-151, 242
 Audran, 53 note
Auripigmentum, 166
 Australian tribes, colour sense among, 75

Bacchus, Leonardo, 163
 Bachelier, 43
Baignoire, Renoir, 58 note
 Bail, 136
Barque du Don Juan, Delacroix, 53 note
 Baschet, Marcel, 237

INDEX

- Bastien-Lepage, 63
Bathsheba, Rembrandt, 129
 Battens, rounded, 123
 Baudelaire, on Delacroix, 55 *note* ; on the Salon of 1846, 62
 Béarn, Mme. de, 116
 Beaudoin, fresco, 102
 Beaune, hospital of, triptych of van der Weyden, 26 *note*
 Beauvais tapestries, 42
 Beaux Arts, Ecole des, 36, 53, 217
 Belle, 40
Belle Ferronnière (La), Leonardo, 157, 163
 Belles-Lettres, Académie des, 43
 Bénard, Henri, 237
 Benner, 230
 Benzine, use of, 108 *and note*, 144
 Berger-Levrault, 75
 Bertholet, 202
 Bertin, Armand, portrait by Ingres, 70 *note*, 163-165
 Besnard, 63
 Bitumen, effects of, 127, 172-173
 Black Band, the, 63
 Blacks, 173
 Blanc, Charles, 127
 Blisters or bubbles, removal of, 193-194
 Blockx, Jacques, *Compendium cited*, 119 *and note*, 158, 178
 Bloom on varnish, 125-127, 141-142, 143, 145, 176, 229
 Blues, 169-171
 Body colour. *See* Gouache.
 Boisbaudran, Lecoq de, 60-61
 Bonnat, 64, 237, 239 *note*
 Bordes, 237
 Boucher, 33 *note*, 42
 Bouguereau *cited*, on varnishes, 136 ; pupils, 153 *note* ; on use of bitumen, 173
 Boulogne, 224
 Bouquet, 43
 Bourgeois, Chas., 79, 223
 Brascassat, 149 *and note*
 Brauwer, 34
 Breda, Jan van de, 224
 Breughel, Velvet, 224
 Brio, 242
 Brisson, 205
 Browns, 171-173
 Brunellesco, 15-16
 Brunner Gallery, 90 *note*
 Burne-Jones, 181-182
 Byzantine use of canvas, 14

- CADMIUMS, 155, 165-167
 Calan, of Leipzig, 43
Camaïeu, 16
 Canvas, early use, 14 ; oil painting on, 115-117

INDEX

- Canvases, choice of, 122-123; preservation of, 123; rolling of, 122-124; accidents to, 193-196; lining, 196-198; transferring, 198-199
- Caracci, the, 30 *note*
- Caravaggio, 27
- Card Party (The)*, Pieter de Hooch, 142 *note*
- Cardboard, oil painting on, 115
- Carrière method, 47; colour, 64; style, 242
- Cartailhac *cited*, 75
- Cartoons, necessity for, 29-30; for tapestry, 41-42; for frescoes, 100
- Caseine, 118
- Cassel earth, 172
- Castagno, 24 *note*
- Castellan, 43-44
- Cave-paintings, 1-2
- Caylus, Comte de, *cited* on Watteau, 38-39; revival of encaustic, 43; formula for, 66, 109-110; study of wax-varnish, 190
- Caze, La, 234
- Cazin, 60
- Ceilings, preservation of, 217
- Cène (La)*, Dagnan, 116
- Cennini, Cennino, *Treatise cited*, 11-15, 17-19, 76, 101-102, 114, 130-131
- Central Bureau, proposal to create, 236-237
- Champagne, Philippe de, on colour, 31; portrait by, 157
- Chantilly—
Duel de Pierrot, Gérôme, 129
- Chantrey, 55 *note*
- Chapay, 205
- Chaptal, Comte de, 170
- Chardin, method, 39-41, 58, 60
- Chérubini, portrait by Ingres, 70 *note*
- Chevreul, theories, 60, 77-80; three contrasts, 80-81; on resulting colours, 81-82; Dinet's observations, 82-83
- Chiaroscuro, Leonardo on, 16-18
- Chinnery, 90 *note*
- Christ*, Prudhon, 127
- Christol, Frédéric, *L'Art dans l'Afrique australe*, 1, 75 *and note*
- Chromes, 166-169
- Cicero on painters, *quoted*, 10
- Cimabue, 20
- Cimetière de Tétouan (Le)*, Girardot, 98
- Cimon of Cleonæ, 6
- Cirot, 205
- Cleaning before varnishing, 143-144
- Cleanthes of Corinth, 5
- Cobalt blue, 169-170
- Cochin, 40
- Collège de France, 237
- Colour, design ranked above, 30-32; new interest in, 34; use of bitumen, 46; colour-division, 55, 58 *and note*; theories of the pre-Raphaelites, 56; coloration of white, 58-59; Boisbaudran's exercises in, 60-61

INDEX

- Colours, preservation of manufactured, 50-51 ; complementary, 79-83 ; resulting, 81-82 ; solid oil, 110-111 ; deterioration of, 146-173 ; action of light on pigments, 149-151 ; tests for, 150-151 ; how to guard against bad, 234 ; Bill proposed to govern sale of, 237-238
- Colour-vision, inquiry into nature of, 69-76 ; scientific, 76-79
- Commission appointed for transfer of the *Madonna di Foligno*, 202-204
- Commission, first Museums, 213
- Commission of Art Materials, proposed, 234-237
- Condottiere*, Antonella da Messina, 23
- Constable, 56 *note*
- Coronation of Napoleon*, David, 48, 240
- Coronation of the Queen*, Rubens, 214
- Corot, frescoes, 204-206 ; imitations, 230 ; style, 242
- Correggio, method, 26 ; *Antiope*, 214 ; *Saint Catherine*, 214
- Cottet, 63, 64
- Courbet, method, 56 ; forgeries, 230, 233
- Courtray (siccative), 131-132, 173
- Couture, *Entretiens d'Atelier*, quoted, 67-68
- Cracks, 124-125
- Cradling. *See* Parqueting.
- Credi, Lorenzo di, 23
- Crivelli, 14
- Cros and Henry, methods, 65-66, 75-76, 108-109
- Crucifixion*, Andrea Solario, 207 *note*
- Cydias of Cynthus, 8 *note*
-
- DAGNAN, *La Cène*, 116 ; method of priming, 116 ; use of oil, 131 ; an experiment, 147 ; on the *Monna Lisa*, 160-161 ; use of terre verte, 169
- Dalbon, *Origines de la Peinture à l'huile*, 19 *note*
- Damp, effect of, 141, 177
- Darcy, 223
- Darwin, theories, 71
- David, Eméric, *Histoire de la Peinture* quoted, 44
- David, method, 47-49, 50 *note*, 52, 53, 98, 186 ; *The Oath of the Tennis Court*, 47 *note* ; *Coronation of Napoleon*, 48, 240 ; and the Museums Commission, 214
- Dealers, dishonest tricks of, 230-234
- Death of Peter Martyr*, Titian, 200-201
- Decadence of primitive painting, 10-11
- Decamps, quoted, 40 ; method, 51
- Degas, 59, 239 *note*
- Delacroix, technique, 17, 242 ; on David, 47 *note*, 48 ; method, 50-52 ; on colour, 52-55 ; *Barque du Don Juan*, 53 *note* ; on line, 59 ; and complementary colours, 81 ; *Algerian Women*, 82 ; *Journal* quoted on restoration, 206
- Delphi, temple of Apollo, paintings in, 6
- Deluge*, Poussin, 214
- Design, 241
- Détrempe, 5 *note*
- Diaz, 230 ; story of, 233

INDEX

- Diderot, 43
Diesback, discovery of, 171
Dilettantism, 10
Dinet, observations on Oriental language, 73-74 ; on complementary colours, 79-80 ; on Chevreul, 82-83 ; method, 98 ; on primings, 119 *note* ; on dryers, 130, 132 ; on use of wax, 139-140 ; on varnishes, 142-143, 145-146 ; on testing of colours, 149, 150, 152 *note*, 237 ; experiments in colour, 158 ; on the *Monna Lisa*, 160-162 ; on Leonardo's vermilions, 163 ; on Ingres, 165 ; receipt for madder vermilion, 165 ; on cadmiums, 167 ; on use of bitumen, 173 *note* ; on egg-varnish, 181 ; on restoration, 183-184, 207, 210, 215-216, 221 ; on wax varnish, 190 ; a method of restoring, 215-216
Diogenes, Poussin, 214
Dippel, 171
Diseases of pictures—
 Deterioration due to bases, 112-123 ; accidents, 124-146 ; deterioration of colours, 146-173
Distemper, 5 *note* ; handling of, 90-92
Domenichino, 30 *note*
Doughty, 46
Dow, Gerard, 28
Dryers. *See* Siccatives
Dubois, Paul, 171
Duel de Pierrot, Gérôme, 129
Dumoustier, 41
Duprés, Jules, 231
Duprés, Victor, 231
Duran, Carolus, 237 ; method, 98 ; on varnishes, 139 *note* ; on the Bertin portrait, 165 *note*
Durandeaue, invention of, 188-189
Durand-Ruel, 58 *note*
Dutch School, Reynolds on the, 29
Dyck, Van, method, 28 *and note* ; copies Rubens, 225

EASEL-PICTURES, 9
Eau flamande, 180
Eckermann, *Goethe's Conversations*, 81
Ecphantus of Corinth, 6
Egg, oil of, 129
Egg-painting, 102-104
Egg-varnish, evils of, 144, 181, 189
Egyptian art, colours of the Egyptians, 2-4 ; encaustic paintings, 9-10 ; methods, 93 ; restoration, 192
Elemi, 93 *and note*
Eleodoric painting, 43
Emerald green, 168-169
Encaustic, 9 ; reappearance of, 43-44, 65-66
Encaustic painting, process of, 108-110
Encouragement, Société d', 170
Equestrian Portrait of Philip IV., Velasquez, 128
Eraclius, manuscript of, *cited*, 11 *note*, 14, 18
Eudel, Paul, *Le Truquage*, *cited*, 224, 230, 236

INDEX

- Eumares of Athens, 6
 Euphranor, 5
 Eyck, Van, process, 19, 139; *Virgin with a Donor*, 124, 240

 FABRIANO, Gentile da, 14
 Falguière, *Woman holding a Dagger*, 125
Favorite (La), frigate, 201
 Félibien, 31-32
 Flanders, oil painting in, 21-22
 Flandrin, 93
 Flemings, methods of the, 14, 26, 133, 139
 Fly-stains, removal of, 210; imitated, 227
 Foligno, 201
 Forgeries, 175, 221-226; methods of the forger, 226-230
 Fragonard, 42
 Français, 53 *note*
 Francesca, Piero della, 16
 French school, portrait painters, 32; process of oil painting, 104, 130; difficulties of restoration, 211-212
 Fresco-painting, principles, 99-100; method, 100-102
 Frescoes, Greek, 8-9; removal of, 204-206; cleaning of, 220-221
 Fromentin, *Les Maîtres d'Autrefois* quoted, 27 *note*, 28-29, 51, 62 *note*, 66 *note*
 Fromentin sale, the, 231

 GADDI, Taddeo, 12-13
 Gandara, 116
 Gardner, 90 *note*
 Gare Saint Lazare, Monet's painting, 59
 Gas, coal, effect of, 177
 Gelatine, 117
 Géricault, 50
 Gérôme, primings, 121; *Duel de Pierrot*, 129; receipt for varnish, 138 *note*, 139 *note*
 Gersaint, 39
 Gerspach, 221 *note*
 Ghent, master-painters of, 22
 Ghirlandajo, perspective, 16; *Visitation*, 19 *note*; method, 24; *Old Man with a Child*, 102
 Gigoux, 53 *note*
Gioconda (La), Leonardo, 17, 25, 160-162
 Giordano, Luca, 224
 Giotto, 13
 Girard, Paul, *La Peinture antique*, 6 and *note*, 7
 Girardot, method, 87 *note*; on fixatives for pastels, 89-90; his recipe for glaze, 98; *Le Cimetière de Tétouan*, 98; choice of wood, 112; use of paper, 115; on canvases, 123; and re-painting, 129; on varnishes, 138 *note*, 139 *note*; on terre verte, 169; on black, 173; supports proposal for Commission, 237
 Girodet, 49
 Glass over pictures, 149, 217-219
 Glazes, 96-98
 Glycerine, 118
 Gobelin tapestries, 42

INDEX

- Goethe *quoted*, 72 ; *Goethe's Conversations*, Eckermann, 81
 Gouaches, 93 ; preservation, 220
 Grailly, 223
 Greco, El, 60 *note*
 Greece, painters of, 4-10
 Greens, 168-169
 Gregory, Pope, 11
 Greuze, portraits, 33 *note* ; method, 38 *note* ; *The Village Bride*, 211-212 ; counterfeits, 223
Grisaille, 16, 26, 28, 36-37, 46 *and note*
 Gros, method, 49-50
 Grün, Jules, 86 *note*
 Guido, 30 *note*, 224
 Guillemet, 230, 233
 Guimet, 170
 Guiton, 202
- HAARLEM dryer, 133
 Hacquin, 200, 202, 203, 214
 Hals, Frans, 34
 Handling, 64
 Harpignies, 237
 Heat, effect on pictures, 141, 176-177
 Hébert, 243
 Heid, Mlle., 41
Helena Fourment and her Children, Rubens, 142
 Henner, method, 47 ; handling, 107 ; *Recumbent Nymph*, 129 ; imitations, 230
 Henry, Charles, 60, 65-66, 75-76
 Hieroglyphics, use of, 67-68
History of Marie de' Medici, Louvre series, Rubens, 27, 156, 213
Hoar-Frost, Monet, 58
 Hobbema, 230
 Holderness, Lord, portrait, 45
Holy Family of Francis I., 214
 Homer, 67, 72, 73
 Hooch, Peter de, method, 29 ; *The Card Party*, 142 *note*
 Horsin-Déon, *cited*, 222, 223
 Humbert, 237
 Humboldt, 60
 Huysum, Jacob van, 224
 Huysum, Jan van, 224
- Ilioupersis*, the, Polygnotus, 6
 Impressionists, methods, 31, 55-58, 107 ; Delacroix and the, 53 ; and tradition, 59-60 ; colour-division, 63 ; restoration of paintings, 192
 Indian yellow, 167
Infant Moses, Poussin, 214
 Ingres, his palette, 50 *note* ; Amaury-Duval on, 69-70 ; portraits by, 70 *note* ; *Portrait of a Young Girl*, 124 ; *Apotheosis of Homer*, 128 ; *Portrait of Bertin*, 163-165 ; style, 242

INDEX

- Institut National, 200, 202
 Ironing, process of, 197
 Italy, technique in, 14 ; oil painting in, 23 ; process, 105 ; laws
 against exportation of paintings, 232
 JEHN, Albert, use of wax, 190-193
Journal des Arts, 236
 Junius on colour, 30-31

Kermesse (La), Rubens, 213
 Klomp, Albert, 224

Landing of Marie de' Medicis in France, Rubens, 213
 Landscape, distemper for, 92
 Lapis lazuli, 170, 173
 Laporte, Martin, 214
 Largillière, 33-37
 Latour, 88
 Laurens, J. P., 237
 Laurent, Ernest, 107
 Lead poisoning, 152-153
 Leather, tanned, use of, 114
 Lebrun, 53 *note* ; on colour, 31 ; theories, 32, 33 on cleaning,
 182-183 ; copies Poussin, 223-224
 Lemerre, 206
 Lenain, 32
 Leo X., Raphael's portrait of, 224
 Lethière, 49
 Lhermitte, 60, 64
Libro dell' Arte. See Cennini, treatise.
 Light, action on pigments, 149-151 ; effect on pictures, 176-177 ;
 electric, 177
 Lining canvases, 196-198
 Linseed oil, Cennini's formula, 130-131
Loi Ruau, the, 237
 Lorrain, Claude, and the Impressionists, 30 *note*, 55, 60 ; imita-
 tions, 222, 223 ; the *Liber Veritatis*, 223
 Louis XIV., 32 *note*
 Louvre, the, Greek vases, 1 ; Egyptian art, 3 *note* ; Greuze por-
 traits, 33 *note* ; the Rubenses, 38, 81 ; Napoleon's collec-
 tion, 50, 200 ; portraits by Ingres, 70 *note* ; Poussin's
 pictures, 121 ; cracks, 126-127 ; catalogues, 183 ; restora-
 tions, 212 ; repaintings, 234
 Adoration of the Magi, Rubens, 156-157
 Apotheosis of Homer, Ingres, 128
 Bacchus, Leonardo, 163
 Belle Ferronnière (La), Leonardo, 163
 Card Party (The), Peter de Hooch, 142 *note*
 Christ, Prudhon, 127
 Condottiere, Antonello da Messina, 23
 Gioconda (La), Leonardo, 160-162
 Helena Fourment and her Children, Rubens, 142
 Madonna of Francis I., Raphael, 159
 Marie de' Medicis series, Rubens, 27, 156, 213

INDEX

Louvre, the—*continued*.

- Monna Lisa*, Leonardo, 160-162
- Oath of the Tennis Court*, David, 47 *note*
- Old Man with a Child*, Ghirlandajo, 102
- Portrait of Bertin*, Ingres, 163-165
- St. Michael*, Raphael, 199
- Triumph of Religion*, Rubens, 157
- Village Bride*, Greuze, 211-212
- Virgin with a Donor*, Memling, 160
- Virgin with a Donor*, Van Eyck, 124
- Virgin with Angels*, Rubens, 114, 199
- Visitation*, Ghirlandajo, 19 *note*
- Young Girl*, Ingres, 124

Luxembourg, the—

- Cimetière de Tétouan (Le)*, Girardot, 98
- Hoar-Frost*, Monet, 58
- Recumbent Nymph*, Henner, 129
- Woman holding a Dagger*, Falguière, 125

MADDER Carmine, 158-166

Madonna di Foligno, Raphael, 114, 201

Madonna of Francis I., Raphael, 159

Magnus, Hugo, on colour-vision, 71-76, 78 *note*

Mantegna, 16, 242

Mantua, Duke of, 224

Marcheix, 36

Margaritone of Arezzo, 14

Marie de' Medicis series in the Louvre, 27, 156, 213

Mariette, 39

Marigny sale, 211-212

Marouflage, 226

Mars yellow, 167-168

Masaccio, 16

Mason, *quoted*, 45-46

Master painters, regulations framed by, 22

Mat, 116, 139

Maxence, method, 64, 88, 120-121

Megabyzus, 8 *note*

Meissonier, choice of wood, 112; use of terre verte, 169

Memling, *Virgin with a Donor*, 160

Ménard, colour, 64

Mérimée, *De la Peinture à l'huile cited* on oil painting, 20, 96, 97; on Rubens, 27 *and note*; on Greuze, 38 *note*; on Reynolds, 45 *note*; on tin tubes for colours, 51; on primings, 119; on cobalt blue, 169; on colours, 171-172

Mesne, President de, portrait, 157

Messina, Antonella da, method, 19, 24; *Condottiere*, 23

Metzu, 29

Meudon white, 152

Meyer-Sée, 90 *note*

Michelangelo frescoes, 29; on oil, 24; method, 44; art of, 67; imitators, 225; characteristics, 241

Micon, 6-8

Mignard, portraits, 33 *note*

INDEX

- Mildew on pastel, 219
Mixed painting, 99-111
Monet, Impressionism, 58-60; *Hoar-Frost*, 58; *Still Life*, 58
 note; painting of the Gare Saint Lazare, 59; technique, 64
Monna Lisa, Leonardo, 160-162
Montabert, Paillot de, 43, 44
Montpetit, Sieur Vincent de, 43, 217
Moreau, 42 *note*
Moret, Grailly, and Bourgeois, Messrs., 223
Mosaic, 11 *note*
Mummy, 173
Museums Commission, the first, 213-215
Museums, rules for building, 177

NEO-IMPRESSIONISM, 60-61
Night-Watch, Rembrandt, 187-188
Nolhac, 188
Normal resin, 136
Nut oil, 130

Oath of the Tennis Court, David, 47 *note*
Œillette, 104, 130
Oil colours, solid, 110-111
Oil painting, beginnings of, 18-20; method of the Van Eycks,
 20-25; apogee and decline of, 25-29; process, 104-108
Oil paintings, deterioration of colours, 111, 146-173; deterioration
 due to bases, 112-123; accidents to, 124
Oil varnishes, 135
Oils, 129-131, 133
Old Man with a Child, Ghirlandajo, 102
Opaque painting, processes, 85-94
Ostade, 223
Oudry, discourse *quoted* on colour, 34, 38; primings, 121
Over painting, 127-129

PALETTE, use of the, 15, 23, 101
Panel, method of transferring a picture from a, 199-204
Panels, wood for, 112-114; preparation, 114-115
Paper, oil painting on, 115
Paris white, 118
Parqueting or cradling, 113-115, 199
Parrhasius, technique, 7-8; panel paintings, 9
Passavant, 200
Pastels—first use of, pastel, 41; reappearance of, 65; protection
 of, 85-87; method of execution, 87-88; fixatives, 88-90;
 glazing of, 90; diseases, 111; preservation, 219-220
Pata, 230
Patel, 222
Pausanias, 7
Péladan, 16
Pentimenti, 127-129
Perignon, 223
Perrault, Charles, *Poème de la Peinture*, 32

INDEX

- Persians, method of the, 93
 Perspective, creation of, 15-16
 Perugino, methods, 20, 24, 26
 Petit Palace, frescoes, 102
 Petroleum, 134
 Phidias, 4, 67
 Philocles, the "Egyptian," 5
Philosopher, Rembrandt, 240
 Philostratus, 9, 108
 Photographers, methods of, 181-182
 Picault, 198
 Picture galleries, building of, 177
 Pictures, how to look at them, 239-244
 Pierre on Greuze's *Village Bride*, 211-212
 Pintorricchio, 14
 Pissaro, 59
 Plans, Galerie des, 213
 Pliny, *cited*, 5, 8 *note*, 9, 10, 11, 108
 Plutarch, *cited*, 8 *note*, 9, 10
Pointillisme, 60, 107
 Pollajuolo, 24
 Polygnotus, the *Ilioupersis*, 6; frescoes, 8; colours, 8 *note*
 Polytechnique, Ecole, 170
 Portrait painters, 32
 Potter, Paul, 224
 Pottier, E., 1
 Poussin, method, 30-32; primings, 121; restorations, 211; the
 Deluge, 214; *Diogenes*, 214; *Infant Moses*, 214; *Woman*
 taken in Adultery, 214; imitations, 223-224
 Prado Gallery—
 Equestrian portrait of Philip IV., Velasquez, 128
 Praxiteles, 4
 Pre-Raphaelism, 56-57
 Preservation of pictures, 175-180
 Primings, 118-122
 Primitives, cave-paintings, 1-2; methods, 23 *note*, 33-34, 107;
 use of gold-leaf, 26 *note*; the French, 29-32, 160; use of
 colour, 31; practice of egg painting, 103; primings, 119,
 121, 200; use of red madders, 159-160; use of terre verte,
 169; restoration, 210-211; forgeries, 226-227
 Processes, 84-111
 Protogenes, 5
 Protuberances, repair of, 193
 Prudhon, technique, 46; handling, 107; *Christ*, 127; imitations,
 223
 Prussian blue, discovery, 171
 Pythagoreans and colour-vision, 72

QUADRI di fabbrica, 222

RAFFAELLI, solid oil colours, 110-111
Rainbow (The), Rubens, 213

INDEX

- Raphael, oils, 25, 26; frescoes, 29; influence, 30; method, 44; Couture and, 67; *Madonna di Foligno*, 114, 201; *Saint Michael*, 114, 199; use of canvas, 114; *Madonna of Francis I.*, 159; restorations, 200; portrait of Leo X., 224; pupils, 225; characteristics, 241
- Reading Girl*, Renoir, 59
- Recumbent Nymph*, Henner, 129
- Reds, 154-166
- Regnaud, 213
- Regnault, Henri, 152
- Rembrandt, method, 28 *and note*, 34, 98; *Bathsheba*, 129; *Night-Watch*, 187-188; *Philosopher*, 240; style, 242
- Renaissance, early Italian, 30; method of the time, 107; workshops of the, 224-225
- Renoir, *Baignoire*, 58 *note*; *Reading Girl*, 59
- Requeno, Abbé, 43
- Resin, 135-136
- Restoration of pictures, 175, 181-217; Delacroix on, 206; Dinet's method, 207, 215-216
- Restorers, methods of, 192 *and note*, 215; qualities necessary in a restorer, 208-212, 215-216; restorers of the Revolution period, 212-213
- Re-touching mixtures, 139
- Reynolds, *Twelfth Discourse* quoted, 28 *note*; on the Dutch School, 29; and Boucher, 33 *note*; method, 44-46, 243 *note*
- Richter, Dr. J. P., 16 *note*
- Rig-Veda*, the, 71
- Riout, 223
- Rivière, Mons. and Mme., portrait by Ingres, 70 *note*
- Roehn, 223
- Roeser, 204
- Roll, 121 *note*, 237
- Romano, Giulio, 24, 224
- Romanticists, 53
- Rome, painting in, 10-11
- Rosalba, 41
- Rosselli, Cosimo, 14
- Rouen Cathedral, Monet's painting, 58-59
- Royal Academy, the, and the pastellists, 41 *note*
- Rubens, method, 22, 27, 28, 34, 48, 49, 98; *History of Marie de' Medici* series in the Louvre, 27, 156, 213; Mérimée on, 97; use of panels, 114; *Virgin with Angels*, 114, 199, 214; varnish, 139; *Helena Fourment and her Children*, 142; *Adoration of the Magi*, 156-157; restorations, 156-157; *Triumph of Religion*, 157; use of terre verte, 169; *La Kermesse*, 213; *The Rainbow*, 213; pupils, 225; characteristics, 240
- Ruskin, theories, 56
- Russell, fixatives used by, 90 *note*
- Ruysdael, 223, 230
- SAHARA, temperatures, 83 *note*
- Saint Bartholomew, incident of the massacre, 81
- Saint Catherine*, Correggio, 214

INDEX

- Saint Germain-des-Prés, 93
Saint Michael, Raphael, 114, 199
 Sarcophagi, Egyptian, 14
 Sarto, Andrea del, 224
 Sauvigny (Côte d'Or), 204
 Say, Mme. Léon, 164
School of Athens, 101
 Sciences, Académie des, 79, 191, 217
 Sculpture, primitive, character of, 69
 Seurat, Georges, 60
 Shakespeare, 67
 Siccatives, 131-133
 Sicyon, 5
 Signac, Paul, 60, 107
 Signatures, forged, 229
 Silver white, 152
 Size for priming, 116-118
 Snyders, 224
 Society of St. Luke, 236
 Solario, Andrea, *Crucifixion*, 207 note
 South African tribes, colour sense among, 75
 Spike, oil of, 134
 Spirits of wine to remove varnish, 185-188
 Stendhal, 239
Still Life, Monet, 58 note
 Strontian yellow, 167
 Style, 241

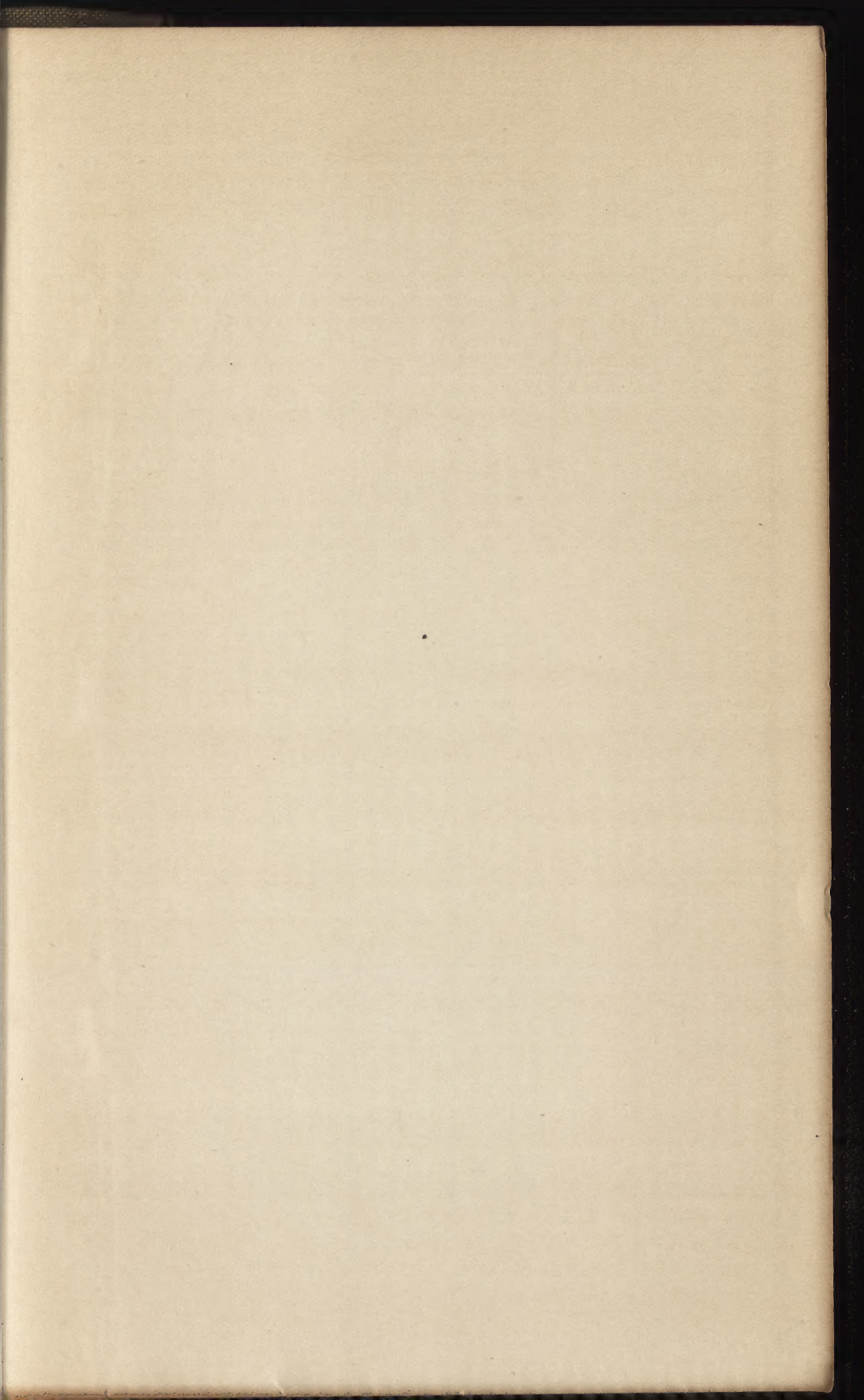
Tableaux de tournure, 222, 226
Taking of Constantinople, 17
 Tapestry, cartoons for, 41-42
 Taubenheim, Chas., Baron von, 43, 190
 Taunay, 42 note, 202
 Telephanes of Sicyon, 5
 Tempera, 5 note, 15, 102-104
 Temperature for museums and galleries, 178
 Teniers, David, 32, 34, 224
 Terburg, 29
 Terre verte, 169
 Tests for genuineness, 228
 Thénard, 169, 220
 Theophilus (Rogierus), treatise cited, 11 note, 14, 18, 114
 Thespis, 6
 Thiele of Erfurt, 41
 Tintoretto, 24
 Titian, method, 25, 26, 28, 49, 98, 108; *Mérimée* on, 97; *Death of Peter Martyr*, 200-201; copies, 224; characteristics, 240, 241
 Tocqué, *Reflexions*, 33 note
 Torn canvases, 194-196
 Tour, Quentin de La, 41
 Transferring a picture, method, 198-206
Transfiguration, Raphael, 200
 Transparent painting, 94-98
Triumph of Religion, Rubens, 157

INDEX

- Trouillebert, 230
 Troy, de, 33
 Turner, 30 *note*, 55, 59
 Turpentine, spirit of, 134
 Tyssens, Pieter, 28 *note*
- UCCELLO, Paolo, perspective, 16
 Ultramarine, French, 170
- VARNISH, Cennini on use of, 15; glazes and varnishes, 96-98; composition of, 135-140; evils of egg-varnish, 181; removal of, 182-183, 185; wax as, 189-193; the forger's use of, 227
 Varnishing, purpose of, 140-141; bloom, 141-142; precautions, 142-143; operation of, 143-146
 Vasari *cited* on the use of canvas, 14; on the advent of oils, 19 *note*; saying of *quoted*, 23; on the *Gioconda*, 25; on the *Monna Lisa*, 160-162; as pupil of Sarto, 224
 Vaseline, 134
 Vatican paintings, 11, 44
 Vauquelin, 170
 Vedas, the, 72
 Velasquez, *Assumption of the Virgin*, 60 *note*; *Equestrian Portrait of Philip IV.*, 128; characteristics, 240
 Velde, Van de, 223
 Venetians, methods of the, 26, 33
 Veneziano, Domenico, legend of, 24 *note*
 Venius, Otto, 22
 Vermilion, 155
 Vernerin, Mme., 41
 Vernon, 230
 Verona, frescoes whitewashed at, 221
 Veronese, oil paintings, 24; use of distemper, 92; method, 108; characteristics, 240-241
 Veronese green, 169
 Verrocchio, 24
 Versailles museum, 126, 188
 Versailles, palace of, 188
 Vibert, *La Science de la Peinture cited*, 22 *note*, 92, 94, 97, 102, 105, 108, 114 *note*, 119, 120, 123, 129, 132, 135, 147, 148; Vibert varnish, 115, 135-136; on torn canvases, 194-196; his remedy for bad colours, 234-237
 Vigée-Lebrun, Mme., 182
 Village Bride, Greuze, 211-212
 Ville d'Avray, 205
 Vincent, 202
 Vinci, Leonardo da, *Treatise on Painting cited*, 16-18, 30, 76-77, 157, 162 *note*; *La Gioconda*, 25, 160-162; oil paintings, 25-26; *La Belle Ferronnière*, 157, 163; *Monna Lisa*, 160-162; *Bacchus*, 163
 Violets, 171
 Virgil, 67
 Virgin with a Donor, Memling, 160
 Virgin with a Donor, Van Eyck, 124, 240
 Virgin with Angels, Rubens, 114, 199, 214

INDEX

- Virtuosity, rise of, 33
Visitation, Ghirlandajo, 19 *note*
Vitruvius, 9, 108
Vos, Paul de, 224
- WATER-COLOUR painting, 42, 65, 94-95
Water-colours, diseases, 111 ; preservation, 219 ; cleaning, 220
Water-varnish, 103-104
Watteau, method, 33, 38 ; technique, 38-39 ; Impressionists
and, 59
Watts, G. F., 57
Wax for encaustic, formula of Comte de Caylus, 110 ; as varnish,
139, 189-193
Wax-painting, 93-94
Weyden, Rogier van der, triptych at Beaune, 26 *note*
White lead, dangers from, 152-153
White pigment, 152-154, 158
Whitewashing of frescoes, 221
Woman taken in Adultery, Poussin, 214
Wooden panels, choice of, 112-115
Wouwermans, 224
- YELLOW, 166-168
- Zend-Avesta cited*, 71-73
Zeuxis, technique, 7-8 ; an incident, 8 *note* ; panel paintings, 9
Zinc white, 152, 154




84-B9495-2



GETTY CENTER LIBRARY
ND 1500 M83 1912
c. 2 Moreau-Vauthier, Cha
The technique of painting /

CONS
BKS



3 3125 00175 1011

